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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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LAKE CARRIERS' ASSOCIATION.

A well attended meeting of the finance committee of the Lake Carriers' Association was held in the offices of the president, Capt. James Corrigan, Cleveland, O., on Tuesday afternoon, Capt. C. E. Benham, secretary pro tem.

A communication from Mr. Philpin, of Duluth, Minn., containing an offer to trim ore for 2½ cents at Duluth to correspond with the Marquette rate, was received and on motion, Capt. Alex McDougall was authorized to arrange for ore trimming at that port. Captains Wilson, Bradley and Mack were appointed a committee to secure if possible, a reduction in trimming charges at Ashland, Wis.

Relative to the equal distribution of taxes on vessel property, it was the sense of the meeting that it would be more equitable for a national tax to be levied on vessels, same to be fixed by the general government, the revenue to go to offset in some degree the national expenditures for waterways, and accompanying this tax law a provision rendering them exempt from all state or local taxation, and a committee was appointed to further the project.

The recent ruling of the board of supervising inspectors prohibiting the use of passing signals in a fog was taken up and thoroughly discussed, resulting in the passage of the following resolution:

"RESOLVED, That the Lake Carriers' Association considers the pilot rules, as amended per circular of February 28, 1894, absurd and obnoxious, and that a committee of three be appointed by the president, and that said committee, with the association's attorney, be instructed to discuss said rules and formulate a communication to be sent to the Secretary of the Treasury, and to the Inspector General James A. Dumont, of the steamboat inspection service, asking that the operation of said rule (so far as the northwestern lakes and rivers are concerned) be suspended."

President Corrigan appointed on this committee Captains Benham, Wilson and Mack.

A communication from Capt. J. J. H. Brown, of Buffalo, N. Y., detailing the particulars of the grain discharging system and rates at that port was laid before the committee. The charges, it appeared, were fixed by the grain shovelers' union at Buffalo, and were $4 on steamers and $4.50 on schooners and barges last year. A few weeks ago a committee of the Lake Carriers' Association met with the elevator men and asked for a reduction in rates. They were referred to the grain shovelers' union, and upon application to that body, the latter refused, after voting on the question, to reduce the rates of last year, which were thereupon put in force for this season. The elevator men declined to interfere in any way, or to co-operate with the vessels in hiring non-union men. It seems the rates have been raised fifty cents per thousand bushels, and steamers which arrive there find that they cannot be discharged for less than $4.50 per thousand. This is considered an outrage by the vessel men, who compare the charges to those at Port Huron, where the assessment is only $2.50 per thousand bushels. The committee called the attention of the elevator owners to a law passed in the state of New York some years ago, which had the obvious intention of regulating the Buffalo elevator combine, but which does not seem to have accomplished its object so far. The elevators were by this law allowed to charge only for the "actual cost" of shoveling the grain to the leg of the elevator, and it is now contended that the actual cost clause has been violated.

After reviewing the entire situation positive measures to relieve vessels of this exorbitant rate for discharging grain was advocated, and the committee in whose hands the business is placed, was given extended powers to accomplish a reduction in future charges.

A letter from the chief officer of the Marine Engineers' Beneficial Association, National President Uhler, asking for a conference on a date which had passed, was received and placed on file.

Mr. P. M. Church, of Sault Ste. Marie, made a gratuitous offer to keep the lights at Church's Point burning during the season of navigation, as many vessel masters had found his beacon of invaluable service, and he desired to facilitate the river commerce. In taking action on this communication the secretary was instructed to confer with Major Milton B. Adams, Corps of Engineers, U. S. Army, Detroit, Mich., who has federal jurisdiction as engineer in the Eleventh District, and if a satisfactory arrangement can be entered into, the lights to be kept burning.

A letter was placed before the committee from Norman B. Conger, lake marine agent of the Department of Agriculture, Weather Bureau, tendering the use of the government's Thunder Bay Island telegraph line in reporting vessels which pass up and down Lake Huron, should they so desire. The offer was courteously considered and on account of the closeness of existing reporting stations, was declined as unnecessary, but it was evident that reports from vessels in distress in that vicinity would be of direct importance and the committee extended to Mr. Conger a vote of thanks for his thoughtfulness in the matter.

A proposition from Mr. King to trim iron ore at Ashland, Wis., at a rate of 2½ cents was referred to a committe composed of Capts. Thomas Wilson, C. E. Benham and Mr. M. A. Bradley. Capt. Benham, chairman of the committee appointed to secure a reduction of the rates on discharging lumber, reported a satisfactory agreement with the Cleveland men and the Chicago committee reported that they had arranged to have lumber discharged at that port for twenty cents per thousand feet.

A list of tonnage for which certificates of membership had been asked for the season of 1894 aggregated a total of 543,129 registered tons, with several large fleets yet to be enrolled.

NEW ATLANTIC CABLE.

The new cable of the Commercial Cable Co., which is to be laid from Waterville, on Ballingskelligs bay, coast of Ireland, to Nova Scotia, will be about 2,000 miles long, and the process of laying it will include the dropping of about 400 miles of cable on the eastern side of the Atlantic, then the placing of another 100 miles on the west and finally the picking up of both portions with the main part.

The new cable was made by Siemens Bros. & Co. (limited), of London, who have a process for which they claim great improvements over previous systems. They have guaranteed the Commercial Cable Co. that this one will afford 33 1-3 per cent. improvement in speed over any cable the company now has in use. This means that thirty words a minute may be sent. While the contractors are a London firm, a very large proportion of copper necessary in construction will be furnished by the Messrs. John A. Roebling, Sons & Co., of Trenton, N. J. There will be 500 pounds of copper to the nautical mile, and 320 pounds of gutta percha, making the cable the largest that has ever been made up to this time. An unusual protection, or "armor," has been put upon this cable to resist the anchors in the fishing ground off the Nova Scotian coast. Every inch of the cable has been tested with a current of 5,000 volts, whereas the usual amount of battery, when in operation, is about 50 volts.

"PRINCE HENRY, THE NAVIGATOR."

The school of navigation at Sagres, during Henry's time, was doubtless the first of its kind in Western Europe. It was presided over by one Jayme, a learned mathematician of Majorca. The maps or charts chiefly used came from Venice or Genoa, then the chief maritime ports of Europe. To estimate fairly the character of Henry, we have to consider that in this great work of discovery he stood entirely alone for nearly forty years, aided and looked up to only by such men as had entered his service and received his pay. Nobody connected with the court believed in his theories until near the close of his life success had been all but won.—*Nautical Magazine.*

NEWS AROUND THE LAKES.

CHICAGO, ILL.

Special Correspondence to The Marine Record.

Capt. Nels Anderson has been appointed master of the schooner Commerce.

The U. S. customs barge office at Rush street is now opened for day and night service.

Chittenden & Richardson, vessel agents, have sold the steamer Uncle Charley to W. J. Conners, of Buffalo.

The Marinette Barge Line have sold the barges Whitbeck, Stephenson, Carney and Menominee to M. J. Gallarin, of Buffalo.

Capt. John Pringle, Jr., has had repairs completed on the barge Peshtigo. She will leave here with the steamer N. D. Hayward this week for Saginaw.

J. J. Rardon & Co. sold the barge Empire State for the Marinette Barge Line to C. Counselman, Chicago, and the barge Judd to Capt. Tom Currie, Port Huron.

The 1-cent rate on grain to both Port Huron and Buffalo has started a fitful movement. The lines yesterday succeeded in filling out several cargoes at this low rate.

Capt. Cal Becker arrived here Monday from Pulaski, N. Y., to take charge of the schooner Aberdeen. The steamer Peerless, of the L. M. and L. S. Transportation Co., received a new rudder this week.

The Lumbermen's Association and the vessel unloaders' union at Chicago have entered into an agreement for a scale of rates for unloading lumber cargoes at a reduction of about 20 per cent. off last season's rates.

The steamer City of Kalamazoo, of the Williams Line, which commenced running last week between South Haven and Chicago, has received a new fore and aft compound engine 20 and 40 by 30, built by the Montague Iron Works, Montague, Mich.

The steamer Robert Holland and consorts Fannie Neil and Stevenson left here Monday evening for Ogdensburg with wheat. The steamer F. H. Prince, Capt. Kiah, of the Vermont Line, also left Monday evening for Ogdensburg, the first of that line to leave here this season.

The Goodrich Transportation Co.'s steamer City of Racine, Capt. John Gee, arrived at 1 p. m. Tuesday from Manitowoc. She commenced taking on freight on her arrival and left for Grand Haven and Muskegon at 7:30 p. m. on the first trip of the season on her regular route.

The N. M. Transportation Co.'s steamer Petoskey, Capt. Robertson, arrived here Monday morning with a large cargo of merchandise from northern Michigan ports, on her first round trip this season. The N. M. Transportation Co.'s steamer City, of Charlevoix, Capt. William Finucan, arrived last Thursday afternoon on her first round trip this season with a large cargo of merchandise from Northern Michigan ports.

J. J. Rardon & Co chartered the steamer Spokane for 110,000 bushels of corn to Port Huron at 1 cent per bushel. Palmer, Cook & Calbick chartered the steamer W. H. Wolf for corn to Port Huron at one cent per bushel. P. H. Fleming chartered the steamer T. D. Stimson for corn to Port Huron at 1⅛ cents. Carr & Blair chartered the steamer Uganda for corn to Port Huron at 1 cent and the schooner Ashland for corn to Buffalo at 1 cent.

Fire insurance rates on small steamers and tugs have been advanced considerably above the tariff figure of 1½ per cent. Some of the underwriters are demanding 2½ and 3 per cent. on these risks, and will not take them for less. There is said to be considerable difficulty in getting any fire insurance at all on tugs which are not known to be in the best of repair. Steam barges valued at $10,000 to $20,000 are also meeting difficulty in getting fire insurance.

Charles H. Westcott, supervising inspector, was in Chicago last Friday examining candidates for the office of local inspector of hulls for this district. Captains Frank Root, H. J. Hatch, John Jenks and Robert Young were the candidates examined. Local inspectors Sinclair and Moore inspected the steamer Roumania at South Chicago Monday morning and she left for Buffalo Monday night. The tug Monitor picked up a log in her wheel on Lake Michigan, Sunday evening when returning from Lincoln Park, towing a dredge. The tug's wheel, shoe and rudder were broken and her shaft was bent, totally disabling her, and the services of another tug were required to tow her and the dredge into the harbor.

W. J. Conners, general freight contractor, has opened offices in the San Diego Building, 53 River street. John Bohen is superintendent, John O'Connell, assistant superintendent, and W. P. Burns, cashier. W. J. Conners has contracted with the Union Line, Western Transit Co., and Lehigh Valley Transit Co. to handle all their package freight for the season of 1894. He will load and unload their steamers by the ton and will pay the unloaders 22 cents a ton, a sum sufficient for them to earn more money than they have made before. W. J. Conners has had ten year's experience in handling freight in Buffalo, and by this system of paying by the ton his men earn from $70 to $85 per month at 14 cents per ton. The conditions here differ from those at Buffalo, as many more docks have to be visited for the purpose of loading and unloading, hence the increase in the rate per ton. To facilitate the movements of his men, Mr. Conners has purchased the steamer Uncle Charley to convey the men to the docks where the steamers load and unload.

WILLIAMS.

CLEVELAND, O.

Special Correspondence to The Marine Record.

The steamer J. C. Kershaw is getting a new sternpost at the ship-owners' drydock.

Capt. Bassett reached here this week from Detroit to take charge of his old command, the Manola.

Palmer & Gordon, vessel brokers and agents have opened an office on the seventh floor of the Perry Payne building.

The Minnesota Line steamer Marina cleared Monday night for Two Harbors. The rest of the fleet are expected to get away this week for Lake Superior.

The first to be completed and also the largest steel tug now building for the Smith Co., will be launched from the yards of the Globe Iron Works Co. on Saturday.

Freights are not worth talking about at this port, as there is little or nothing doing in coal, ore charters are as scarce as "hen's teeth" and nothing in them at that.

Capt. W. A. Williams, of the Wilson Transit Liner Missoula, and Capt. C. A. Benham, of the Sitka, left this port for Chicago, on Monday night, to join their respective commands.

A legal agreement was signed, sealed and delivered to Mr. King, of Ashland, on Wednesday afternoon, to trim all ore at that port for 2½ cents. Escanaba rates have not yet been fixed.

Subscriptions of tonnage in the Lake Carriers' Association are very large. Already there is over 550,000 tons in and more is sure to come. The amount last year was not much over 600,000 tons.

A fine, powerful looking tug named the Thomas Spear built and equipped for the U. S. engineer of this district, called forth favorable comments from men on the river during the past few days.

The Cleveland Cliffs Co. steamer Pioneer, Capt. A. E. White, after a thorough overhauling for the season's business, has loaded coal for Detour and will sail on Saturday night for that point and thence to a Lake Superior port.

William Johnston, owner of a Liverpool line of forty steamers, visited the lakes this week. The peculiarity of the Johnston Line is that the forty boats, or thereabout, are all registered as separate companies though managed in the one office.

Capt. Joseph Doville has re joined his schooner, the P. S. Marsh at Chicago, and will sail her again this season. The Marsh is chartered grain to Port Huron at 2⅝ cents, after which she will probably be placed in the Georgian Bay cedar trade.

An inquiry has been raised for the present address of Samuel Nolan. His sister heard from him last about three years ago. He was then at 60 Main street, in this city. Any information regarding him will be thankfully received by Mrs. Robert Nolan, 6411 S. Halsted street, Englewood, Ill.

Capt. Cuson, manager of the Whitney Line fleet, Detroit, attended a meeting of the finance committee of the Lake Carriers Association, held in the offices of the president, James Corrigan, on Tuesday afternoon. Capt. Cuson is one of the men who takes a hopeful view of the season in spite of the awful poor opening.

The Anchor Line steamer Mahoning left Duluth for Buffalo Wednesday afternoon. She is the first boat down Lake Superior. The steamer Centurion led the way up Lake Superior, leaving the "Soo" early Wednesday morning. She was followed by the Gilbert and Gratwick. All are bound for Duluth.

Owing to the resignation of Capt. Chapman from the steamer Yuma, to take charge of the Menominee Line steamer Briton, Capt. Dan Buie, slated this season for the Sitka, has been placed in charge of the new steel freighter of the Wilson Transit Line. This change also advances Capt. C. E. Benham from the Wallula to the Sitka.

Compass adjusters Geo. A. Simpson, Frank Morrison and John Beverly are very busy at this season of the year adjusting compasses. The schoolmaster is abroad and a supply of deviation curves is the order of the day. The master now controls the compass and corrects his courses, not as formerly, trying to find out where certain compass courses would lead him.

The Minnesota Line have given their fleet a thorough overhauling this spring, and in the painting of their high-classed boats the upper works have been changed from a black to a brown oxide. The change in color seems to have improved the appearance of the hulls, but of course this is more a matter of taste than anything else. However, considering the trade these vessels are engaged in, viz., carrying iron ore, the oxide is the proper color.

Fog signals are all right, so also are the signals denoting which side a vessel intends to pass in a fog. It is argued here that without the use of passing signals boats would not be able to proceed in a fog, each not knowing what the other intended to do. This comes of the education in whistling and the compulsory action of both vessels when in imminent danger of collision inculcated among masters and pilots by the rules of the Board of Supervising Inspectors of steam vessels.

The Castalia, Capt. C. C. Allen, has the credit of loading on Monday, April 16, the first cargo of iron ore out of Escanaba this season. Capt. Edward Mooney, in the Wawatam, followed very close. Both of the above named boats are Cleveland built and although not ice-crushers are constructed of good enough metal to force their way through a moderate amount of field ice without injuring their hulls, as the Castalia has arrived here all right and looking as well as when she started out.

The River Machine and Boiler Works (Teare & Thomas) have just shipped one of their compact and powerful deck engines to Mills & Co., Marysville, Mich. This shipment makes a total of seven deck engines purchased by this one firm from the Cleveland manufacturers. A deck engine has also been shipped on the order of the Frontier Iron Works, Detroit, to the Craig Shipbuilding Co., Toledo, O. Amongst the orders now being carried out by the River Machine and Boiler Works is the engine fitting, shafting and forging stems, rudder post and shoe for each of the new steel tugs now building at the yards of the Globe Iron Works Co. for the Smith Towing & Wrecking Co.

At the yards of the Globe Iron Works Co., the finishing work is being put on the handsome twin screw passenger steamer North West and she is indeed a beauty, such perfect completeness in the fittings and workmanship has never been seen on the lakes before, though I am sorry to say that visitors are no longer allowed on board of her, this mandate has been found necessary in order to facilitate her departure on her maiden trip from Buffalo on contract time. The second boat, sister ship to the North West, is all plated and well along toward her time for launching. Work is also steadily progressing on the new steamer for builders account and the first of the fleet of steel tugs will be launched Saturday.

The complaint is rife again that the river is full of snags and old drift wood which endangers the screws and also the paddles on side-wheelers frequenting the port as well as local tonnage. The municipal officers started out well this season in their dredging operations and they cannot afford to lose credit for the excellent jurisdiction observed over the water-front by neglecting to move a few floating or partially submerged obstructions. Harbor-master Lynch ought to be given full authority to facilitate the movement of vessels in the harbor. Evidently Mayor Blee is in tone with the more liberal harbor improvements for in his annual address to the council this week he states as follows: "I will again urge that for the benefit of our city and its marine matters the Cuyahoga river be improved and that its channel be made deep enough on the improved plan of dredging so that our largest vessels can run with safety, deep laden, from the entrance of the Cuyahoga river to the Jefferson street bridge."

BUFFALO, N. Y.

Special Correspondence to The Marine Record.

The state law regulating elevator charges reads as follows:

AN ACT to regulate the fees and charges for elevating, trimming, receiving, weighing and discharging grain by means of floating and stationary elevators and warehouses in this State.

Approved by the Governor June 9, 1888.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. The maximum charge for elevating, receiving, weighing and discharging grain by means of floating and stationary elevators and warehouses in this State shall not exceed the following rates, namely; For elevating, receiving, weighing and discharging grain, five-eights of 1 cent a bushel. In the process of handling grain by means of floating and stationary elevators, the lake vessels or propellers, the ocean vessels or steamships and canal boats, shall only be required to pay the actual cost of trimming or shoveling to the leg of the elevator when unloading, and trimming cargo when loading.

Section 2. Any person or persons violating the provisions of this act shall, upon conviction thereof, be adjudged guilty of a misdemeanor, and be punished by a fine of not less than $250 and costs thereof.

Section 3. Any person injured by the violation of the provisions of this act may sue for and recover any

damages he may sustain against any person or persons violating said provisions.

Section 4. This act shall not apply to any village, town or city having less than 130,000 population.

Section 5. This act shall take effect immediately.

This, the vessel men claim, has been construed by the highest courts to cover the steam shovels as part of the elevator proper and to render it illegal for the elevators to lease the shovels to the boss scoopers, allowing the latter to charge for its use in shoveling grain to the leg of the elevator. A prominent vessel broker states that the controversy would probably reach an amicable solution in a few days. He says the elevator men do not want the matter taken into the courts, as the precedents already established render their defeat certaiu.

Capt. J. H. Killeran has been appointed Marine Superintendent of the Northern Steamphip Co.

The steamer George T. Hope, which brought wheat from Chicago, had 150 bushels damaged by water.

The steamer New Orleans and the steamer Vail, with her consort Baltic, were chartered for coal to Chicago at 25 cents on Tuesday.

George J. Johnson, formerly second mate on the Cayuga, will take the position of boatswain on the passenger steamer North West.

A party of vessel captains were discussing the new law regulating signals Wednesday morning in Galvin & Boland's office. All hands agreed that the prohibition against a pilot signalling to a vessel which he may hear approaching him during a fog is a mistake. The new law provides that in case of fog, vessels must keep sounding their fog whistles, but in case of two vessels approaching each other, they must not signal the side toward which they intend to pass. "Law or no law, you can bet I'll give the signal every time," said a veteran pilot, who voiced the sentiment of the crowd.

In the case of the Northerner, Judge Childs instructed the jury not to consider the loss by fire as it did not appear that the boat had been insured for five days previous to the burning of the steamer. The jury should consider the amount of damages due the owners for the stranding of the boat on Keweenaw point previous to the fire. On this question there is no dispute except as to the amount involved. The owners of the boat are given $10,000. This concerns the policy of the Detroit Fire and Marine only, and it will pay a percentage of this according to its policy. It is not decided whether the other companies will stand trial or pay without. It is thought that the $10,000 will have to stand the rest of the $45,000 loss.

The legislative committee of the Lake Carriers' Association is in favor of the ruling of the supervising inspectors forbidding exchange of passing signals on boats until they are in sight of each other. They will correspond with the members of the association, however, before coming to a final vote on the measure, as many are opposed to the rule.

A number of assaults on non-union firemen have been reported along the docks lately. The latest case was that of William Ryan, who applied at the Fitch Hospital last night for treatment. He was badly bruised by kicks and had a stab wound in his side.

Captain John Green, of the steamer Susan E. Peck, had to come to the Shoveler's union in order to have the grain cargo taken out of his boat. He was compelled to pay 50 cents extra in order to have the union do the work; but this and other cases will be tested by law and the elevators sued for a rebate by a combination of vessel owners.

DETROIT, MICH.

Special Correspondence to The Marine Record.

The schooner S. V. R. Watson has loaded wheat at 1 cent per bushel for Buffalo.

The steam barge Burlington, towing three barges, all laden with lumber, took fire opposite Smith's coal dock Monday morning and the steamer is a total loss. The Burlington was owned by Whittemore and others of Bay City and was worth $15.000. Her lumber cargo was worth about $6,000.

It is claimed that a new propeller wheel which has been put on the steam yacht Magna will increase her speed two miles per hour. The new wheel was put in by the Coller steam yacht and engine works.

The steamers that ran in the Ogdensburg Transit Co.'s line last year will also run this year in that line to Chicago and the same agent, Henry W. Cheesebrough, will have charge of the business at this port.

All the lightships in the eleventh district have been ordered out and Nos. 56 and 57 have left Cheboygan for their respective stations. No. 56 will be stationed at the north side of White shoal and No. 57 at the east end of Gray's reef, both at the north end of Lake Michigan.

Pending the appointment of a successor to local inspector Capt. Hugh Coyne, Supervising Inspector C. H. Westcott performs the duties of that office. As his district includes all the ports on Lakes Huron and Michigan and nearly all of Lake Superior, it keeps Capt. Westcott very busy at this season of the year.

The Detroit Dry Dock Co. have had the Gettysburg in dock for repairs. The steamer Pastime will also be docked for repairs and a general overhauling. At the boiler works a new boiler has just been turned out for the Edwin S. Tice and work is commenced on the firebox boiler for Thompson & Lynn's new tug now building at Port Huron.

BAY CITY, MICH.

Special Correspondence to The Marine Record.

William Peters was victorious in his fight against the union, and the other lumbermen will probably follow in his lead and ignore the union in their work. This organization has ruled the docks here for five years and the lumbermen are preparing to give it its death blow this season and predict that in a few months no remnant of it will remain. On Tuesday fifty men from Peters' mill finished loading the Saginaw without much trouble. The other shippers will commence loading their boats with mill hands as soon as they arrive here.

TOLEDO. O.

Special Correspondence to The Marine Record.

The Lake Erie Transportation Co., has laid up the steamers Gould and Reynolds on account of lack of business. The crews have been paid off and the steamers will not go into commission again until business improves.

MASTER'S AND ENGINEER'S APPOINTMENTS.

M. A. Bradley, Cleveland, O.: Alva—captain, Joseph Holmes; engineer, H. C. Talbot. Geo. Stone—captain, Mathew Mulholland; engineer, C. Williams. Maurice B. Grover—captain, Morris; engineer, R. Hannah. Gladstone — captain, Wysoon; engineer, John Kirby. Henry Chisholm—captain, Paul Howell; engineer, P. H. Doyle. Pasadena—captain, Lafayette Stough; engineer, H. J. Helbing. Superior—captain, Donoghue; engineer, John O'Donnell. E. B. Hale—captain, Thos. Delargie; engineer, ——; J. S. Fay—captain, Henry Brock; engineer,——; Sarah E. Sheldon—captain, Harry Holmes; engineer, Wm. Angell. R. P. Ranney—captain, ——; engineer, ——. Fred Kelly—captain, P. H. Smith; engineer, Osgood. City of Cleveland—captain, Chas. Francke; engineer, William Sullivan. Hesper—captain, Henry Peterson; engineer, Gilbo. Schooner, Adriatic—captain,——; John Martin—captain, Geo. Richards; D. P. Rhodes—captain, Chas. Tift; A. Cobbs—captain, M. Gifford; Thos. Quayle—captain, ——; A. Bradley—captain, Peter Peterson; Sandusky —captain, E. P. Spear; Negaunee—captain, L. C. Cole; S. P. Ely—captain, A. B. Wilson; Southwest—captain, R. C. Smith; S. H. Kimball—captain, John Bridges.

Davidson, Bay City, Mich.: City of Glasgow—captain, Hugh Stevenson; Monohansett—captain, Geo. W. Pardee; schooners Paisley — captain, Geo. W. Starkey; Dundee — captain, Johnson; Aberdeen — C. Becker; Lizzie A. Law—captain, Peter Overrood.

Port Huron marine engineers have made the following engagements for the present season: H. E. Runnels —Arthur Armson; tug Summer—George Bowen; Cleveland—J. G. Buzzard; Nellie—R. B. Buchanan; Colorado —Thos. F. Burtch; City of New York—L. Corner; Pawnee—Frank Cadotte; Thos. Maytham—Robt. J. Close; E. H. Jenks—Oliver Durrant; New York tug line—John Dee; Nipigon—Edward Egan; tug line W. B. Castle—Peter Fenney; Seattle—John Hogan; tug Runnels—Ed. Harvey; Business—Alex Jamieson; Kalkaska—Geo. A. Miller; Samoa—Louis Minnie; Cuba—E. M. Murdock; Mark Hopkins—S. G. Merril; M. Olwell—Peter Mullen; Bulgaria—David McDonald; Osceola—Thos. Morril; Huron City—J. E. Robinson; St. Paul—Henry O'Dette; T. D. Stimpson—L. C. Purdy; L. S. Porter — Gus Rogers; Desmond — Porter Robertson; City of Chicago—Eli Swartout; tug Swain—Jas. A. Southgate; Simon Langell—Anthony Rein; O. O. Carpenter—H. W. Smith; W. H. Sawyer—Thos. Treleaven; Norwalk—A. J. Wilson; ferry Hiawatha—John Kinnie; ferry St. Auber—Dennis Kerrigan; Abercorn—W. F. Leach; Iosco—Thos. Welsh.

The following have secured positions as assistant engineers: Arthur Orr—Norman Annis; Pawnee—Joseph Cadotte; John V. Moran—J. H. Countryman; John Spry —Duncan Campbell; L. S. Porter—Harvey Dupuy; Salina—J. R. Engert; M. Ollwell—J. H. Green; Norwalk—Ed. Gripton; Carpenter—Louis Heythaler; Nelson Mills—Geo. Ingham; Nipigon—N. C. McGuire; John Craig—B. F. Miller; Simon Langell—Matt. Marshall; A. D. Hayward—Ed Moore; tug Castle—E. J. Moore; H. E. Runnels—E. G. Miner; Desmond—H. McIlhuniey; St. Paul—Chas. O'Dette; J. Kendall—John Parrow; Mark Hopkins—Henry Percival; Colorado—E. H. Parry; Bulgaria—Henry Rogers; S. Marshall—H. Rondian; Cleveland—L. D. Rivard; J. J. Hill—John D. Riley; Osceola—John M. Oag; Manola—Walter Thorn; Washburn—Everett Van Liew; Iosco—John Kelly; Mary Groh—Jas. Croskett.

Capt. A. C. Chapman, Menominee Line Steamer Briton; Capt, Dan Buie, Wilson Transit Liner Yuma and Capt. C. E. Benham, Jr., steamer Sitka.

BULLETIN ON THE CAPSTAN-HEAD.

John Lasley has been appointed assistant keeper of the light station at Beaver Island.

Secretary Carlisle has appointed Patrick Cornston to be keeper of the Niagara river range light, vice J. W. Fritz, resigned.

Ir is announced that an attempt will be made to raise the William H. Barnum, which sunk in 11 fathoms of water in the Straits of Mackinac.

A Pittsburger informs us that Andrew Carnegie, the steel king, pronounces his name Car-na-gy, second syllable accented. Vessel men don't have much to do with the millionaire, but it is just as well to know how to pronounce his name as others do.

The upper portage lake ship canal will have fifteen feet of water at the opening of navigation. Heavily loaded vessels are warned to keep slightly to the west of the center of canal. The canal is now in better condition than it has ever been since its construction.

Capt. McIntosh, of Detroit, commanded the new steamer Chicora, of the Graham & Morton line, on her initial trip between Benton Harbor and Chicago, and Capt. Ed Stein, of St. Joseph, will take command the rest of the season. Robert McClure and Albert Werts, of Detroit, are the chief and first assistant engineers.

The Put-in-Bay station of the United States Fish Commission has just completed the work of planting in Lake Erie 62,000,000 fry, about equally divided between white fish and herring. The hatchery is now collecting pike and perch eggs, and expects to bring in from 100,000 to 2000,000.

The steamer Lora will make two round trips each week between Bay City and Alpena. Her officers are, captain, Byron Armstrong; mate, William Allen; clerk, D. J. Lewis; steward, J. H. Brown.

On the Clyde a sailing vessel of 1,600 tons net register can now be built for about £13,000, while three years ago similar ships cost quite £19,000.

The steamer O. B. Reed, which has just arrived at Toledo, is quite a curiosity on the lakes. She is a low-deck side-wheeler, with her pilot house between the smoke stacks, horizontal engines, and is in general construction like a Mississippi river steamboat. She came from Oshkosh, Wis., and was built to ply on the rivers that connect Lake Winnebago with the rest of the world. She will operate on the Maumee, between Toledo and Perrysburg.

Speaking of the effect that shallow water has upon the buoyancy of a vessel, a correspondent of the Liverpool *Journal of Commerce* writes that he was reminded of a conversation that he had some years ago with a White Star Line steamer captain, who said that in going over New York bar, when there was at the time one foot of clear water (more than the draft of the vessel), on account of the shallowness thereof when crossing, the steamer would sink a foot and touch the ground.

Deputations from Walkerville and London, Ont., waited on the Minister of Public Works, at Ottawa, some days since to ask for a grant for dredging Port Stanley harbor. He replied that the money at present voted would probably be required to complete the present piers, but the Public Works Committee would carefully consider the matter. The Walkerville interest represented the Erie & Huron Railroad Co., which has leased the London & Port Stanley Railroad, and which will, in connection with the operation of that line, run the Canadian steamer Lakeside between Cleveland and Port Stanley.

TYPICAL.

Sailors are almost the only class of working men who have considerable sums of money to spend on pay day. In a jewelry shop recently the spectator was reminded of this economic fact. A jolly tar was buying himself a watch. The price was $40. Jack bought the watch without any higgling, and carelessly threw down a $20 bill. The jeweler pointed out the deficiency. "Oh!" was the remark, "I didn't know I had that; I'm so much in." And he fished another bill out of a greasy wallet and threw it on the showcase. It was a fifty. The spectator sighed as he thought of the probable destination, before another morning, of all those hard-earned dollars, the result of many months of perilous toil.

THE Fairbanks Co., manufacturers of scales, are desirous of handling the Magnolia anti-friction metal, and in a letter to the Magnolia Metal Co., New York, they state they have no use for only the highest class of goods, courteously acknowledging that the Magnolia is "strictly first class in every respect." Such a verdict is indeed good, coming as it does from so reputable and well known a firm as the Fairbanks Co.

THE MONOCACY.

Wm. Elliott, U. S. M. C., in the Army and Navy Journal.

Have you heard of that wonderful side-wheeled craft?
That is less than a frigate and more than a raft?
That was built so strongly by Yankee skill,
After thirty years she is running still.
The glorious gallant Monocacy.

She was built when ships were sadly needed,
When beauty of outline was little heeded;
She was built for a purpose; a nation to save,
To save from disunion the "Home of the Brave,"
The glorious, valiant Monocacy.

Noble and well her mission was filled,
Till every heart in the Union was thrilled,
By that glorious news to the nation,
That soldiers and warships had lost occupation,
The glorious, veteran Monocacy.

The war being o'er, and peace declared,
None for the war-scarred veteran cared,
So our gallant ship was fitted and sent,
To enrich the heathen in the Orient,
The glorious, unfortunate Monocacy.

For twenty years or more she's tried at least
To uphold our honor in the East;
Always ready, and never swerving
In duty to the Flag she's serving,
The glorious, faithful Monocacy.

She has battled and weathered many a gale,
Rode on a typhoon if only the tail;
Frozen up in Tientsin, Corea she has coasted,
Or suddenly whisked off to Hongkong to be roasted,
The glorious, weather-worn Monocacy.

Our merchants and tourists, in riot or raid,
Look to our vessel, assured of her aid;
And our missionaries spreading the word of God,
Drop just a little, by way of reward,
To the ungodly, unchristian Monocacy.

But, alas! there came a day, a cruel day.
When spite of all one could do or say,
The "Great Unknown," the powers that be,
Condemned our ship unfit for sea,
The poor old hulk Monocacy.

Sad as it seems, why rail at fate.
There's an end to all things small or great,
E'en the "Deacon's Masterpiece" that stood the blast
For a century, must succumb at last,
Why not then the Monocacy?

What better fate than what she's got,
To shelter all whose earthly lot
Strands on Shanghai's unfriendly shore,
To feed the hungry, and clothe the poor,
The boarding-house Monocacy.

CLASSIFICATION REGISTERS AND BOOK OF RULES

FOR THE CONSTRUCTION OF STEEL VESSELS AND THEIR BASIS FOR SCANTLINGS.

(By Joseph R. Oldham, N. A. and C. E., Cleveland, O., Member of the Society of Naval Architects and Marine Engineers.)

PART NO. 1.

At the present time there may be said to be eight or nine such works as named above which have had an existence of from about one year to sixty-five years. The books referred to are the Bureau Veritas, International Register of Shipping, Norske Veritas, Lloyd's Register of British and Foreign Shipping, Germanischer Lloyd, the Record of American and Foreign Shipping, United States Register of Shipping, and the British Corporation for the Survey and Registry of Shipping. There is also the Great Lakes Register of Shipping, and one or two of the North of England mutual insurance clubs have books of rules for the guidance of their surveyors, but these latter do not, so far as I am aware, prescribe the scantlings for the hull of either iron or steel ships.

The Bureau Veritas, in connection with which the writer received his initiation as a surveyor when he was an assistant to the principal engineer surveyor in England, during the regime or Charles and George Ball and Edward Barrow, was established in the year 1828. The late Liverpool Registry, or Liverpool Lloyds, as it was popularly called on the east coast, was established in the year 1862, thirteen years after which date the writer became one of their surveyors. This registry did much useful work for nearly thirty years, and was in a flourishing condition when it became amalgamated with Lloyd's Register of British and Foreign Shipping in the year 1885.

The Inland Lloyd's vessel register for the classification of hulls, compiled for the exclusive use of the insurance companies and their agent subscribers to the Inland Lloyds, was established in the year 1880. The peculiarity of this register is that approximate valuations of lake vessels are shown in its columns for the purpose of particular average, defining constructive total loss and for limiting the premiums charged for insurance, the value in policy not to be less than 80 per cent. of valuation in register, and not to exceed register valuation for high classed tonnage.

Below I give in chronological order the dates of establishment of the great registers, omitting the Great Lakes Register of Shipping:

	Established
Bureau Veritas International Register of Shipping Paris, France, L. G. Adam, Acting Director	1828
Lloyds Register of British and Foreign Shipping, London, Eng., William Henry Tindall, Chairman	1834
Norske Veritas, Norway	1864
Germanischer Lloyd, Berlin, Germany, R. Ulrich, Managing Director	1868
Record of American and Foreign Shipping, New York, N. Y.	1869
American Lloyds, Theo. B. Blecker, Jr., Pres.	1894
Inland Lloyds Register, Cleveland, O., Daniel McLeod, Manager	1880
United States Register of Shipping, New York, James F. Cox, President	1889
The British Corporation for the Survey and Registry of Shipping, Glasgow, Scotland, Nathaniel Dunlop, Chairman	1893

THE PERSONNEL AND THE NECESSITY FOR CLASSIFICATION REGISTERS.

The purpose for which shipping registers are written and published is of course to supply the underwriters or insurance companies with structural particulars bearing on seaworthiness about ships which they may insure with the cargoes they carry.

This information must be expressed briefly as by numbers, characters or letters. Secondly, these letters, words or figures should be absolutely reliable and they should indicate the strength, or indeed the general scantlings of the ship and her equipment to which they refer, in addition to the time and place of her construction. To make this reliable and definite the vessel must be generally designed and particularly constructed in accordance with a book of rules and scantlings. The executive and staff of these societies is composed of men of reputation and ability, the former being honorable and experienced shipowners, shipbuilders and underwriters. In short, the committees invariably are composed of the best business men, more or less connected with shipping, to be found in the community to which the register belongs.

The staff is generally made up of engineers and naval architects known as reliable and careful experts, and men of tact and good address; in fact, professional gentlemen capable of making friends for the register in the district to which they may be appointed in the discharge of a most responsible duty.

Perhaps I should state here that the shipbuilders generally are elected as members of the registry committees by virtue of their standing as shipowners, for many shipbuilders frequently retain the largest interest in the ships which they construct; for instance, James Laing, of Sunderland, William Gray, of Hartlepool, or Charles Mitchell, of the Tyne, may be numbered amongst the largest individual owners of iron steamship property in the world, if Messrs. Wilson, of Hull, and Messrs. Bates, of Liverpool, be excepted.

Some of these associations are arranged on a purely commercial basis and pay handsome dividends; others are not so constituted but are non-incorporated societies, have no shares and share no profits.

AS REGARDS THE OPERATIONS OF THESE ASSOCIATIONS.

It was not uncommon to see vessels highly classed in a register when her scantlings did not correspond with the book of rules even in a remote degree, and some were classed in books which were not even equipped with full tables of scantlings. If all shipbuilding firms were equipped with a large staff of naval architects and shipbuilders of wide experience who were also generally in touch with the shipbuilding and repairing as practiced in the great centers of such industry in this country and abroad, there would be but little necessity for such books of rules as above referred to, but as such experts are only retained by a few of the largest firms there is at once a use if not a necessity for these associations, if for no other reason than that young shipbuilders and small firms may have guide books and experts at small cost to interpret such books, and also point out defects of construction and workmanship during the building of the ship.

But besides this there is a commercial necessity, or certainly an advantage, in having sound rules for shipbuilding formulated and published, as such may be largely used in lieu of speciail specifications of scantlings for ordinary cargo vessels. Furthermore, shipbuilders thoroughly versed in the rules and requirements of one or other of the great registers are in a position to quote prices for vessels more quickly and with less trouble and expense than would be the case if such quotations had to be based on novel, or possibly peculiar specifications, written by a private individual of limited experience, or if the scantlings had to be ascertained in the shipyard just as the civil engineer works out his sizes for a novel bridge or girder. Moreover, the continuous inspection and classification of a vessel by a reputable registry and staff relieves the shipbuilders as well as the shipowners of considerable responsibility. Just consider for a moment how it would be if we had not such books of rules; imagine the chaos in our shipyards if all such books were suddenly destroyed. I am not now referring to our lake shipyards, for here we have been feeling our own way and no doubt we could still move forward, at least fairly well under such a bereavement, but this would hardly be the case abroad, and the confusion would probably be still worse at the underwriting rooms if the registers also disappeared with the rules. From this it would seem, if such were necessary or permissable for me to effect, that a case is now made out showing the necessity for shipping registers and books of scantlings.

In this paper it will not be attempted to enter on a general criticism of such books as named, but I may just touch on the salient features by which the scantlings of ships of various types and dimensions are regulated.

I propose to analyze briefly the system adopted to arrive at the numbers or approximate tonnage as the case may be.

As the depth of a beam or girder is the most important dimension it may be well to consider that first.

In measuring the depth for numbers or tonnage considerable variety is found to exist. Some books require the depth to be measured from the top of keel to the under side of deck at center (and to arrive at appropriate numbers for vessels with light upper works certain arbitrary deductions are made from the total depth) others substitute the top of floor plates for top of keel. On these lakes, however, our shipbuilders uniformly quote the depth moulded. There is also considerable diversity of opinion as to where the length should be taken; some measure the length between the perpendiculars, others the length on the water line, and one book prescribes different lengths, the length of keel (that is, from the fore side of the stem to the after side of propeller post) being used to estimate the displacement and the length of deck for proportionate dimensions. It has been said that the latter measurement is an unfair one, as a vessel with a long cut water stem would be unjustly handicapped, but I may point out that the overhanging cut-water which is invariably accompanied by a bowsprit, has certain weight of its own, and in a seaway might add almost as much to the bending moment as if the lower part of the stem were carried up in a vertical line to the fore end of the deck. The same reasoning should apply with at least equal force to the stern, i. e. to the counter, for the deck forward of the fore-foot and the deck abaft of the rudder post affects the strength of the structure probably as much as if the stem and stern post were vertical below these points; in other words, I maintain that the extreme after end of the deck, and the extreme fore end also are as much a portion of the hull as the midships portion is.

I thus emphasize this because here we quote the length only as far aft as the propeller or foremost post; in other words, we ignore some 18 or 20 feet of the length of the ship.

The scantlings as applied to various types and dimensions of ships are regulated according to numbers produced by the three principal dimensions of the hull and by girth, so we have linear measurements such as length, breadth, girth and depth, and a combination of all these to ascertain approximate surfaces or cubical contents, in ascertaining which one register uses a coefficient of 70, another 75 a third 80, a fourth 150 and 175. Now all these systems cannot be correct.

It may be said, however, that several of these books of rules have given general satisfaction for a number of years. I am aware that that is so, and their usefulness has been great, though a portion of this success may be due to the ability and tact of the several executives or to the surveyors, but however that may be, if the principle or system of measurement or assessment is wrong, the result cannot be correct when developed purely from such a basis, though it may appear all right by virtue of extraneous aid or modification.

The frame numbers are dependent upon the half girth plus half width plus depth in one book; in other words, on the girth of the half midship section, whilst the depth alone is used by another, and the sum of the breadth and depth measured at various points by others. It may seem somewhat strange that about half a dozen very different systems should be adopted to ascertain the numbers for frames, and theoretically, at least, not more than one of these systems can be correct.

If we were to measure the same ship by these various systems she would appear to have four different lengths and three or four different depths, and for ascertaining the same scantlings we would require to use direct linear measurements, approximate surface measurements and cubical contents of varied magnitudes, then the scantlings would be expressed in sixteenths, twentieths and fortieths of an inch, also in pounds per foot.

TO BE CONTINUED.

CURRENTS OF THE GREAT LAKES.

There has just been issued by the U. S. Department of Agriculture, Weather Bureau bulletin B, showing the currents of the lakes as deduced from the movements of bottle papers during the seasons of 1892 and 1893, compiled by Mark W. Harrington, Chief of the Weather Bureau.

This interesting bulletin contains large sized colored charts of each lake and a general chart of the entire chain, thus producing the finest and most complete delineation of a special study in connection with the physical geography of the Great Lakes ever issued by the government.

It is of paramount importance to the maritime interests to know the direction and velocity, or in technical term, the set and drift of lake currents, and this knowledge the Chief of the Weather Bureau has positively evolved up to the limit of present authenticity.

Quoting from the report in bulletin B relative to return currents:

"It will be observed that, in the case of three of the lakes, the main currents hug one shore. In the case of Lake Superior, it is the southern shore; in the case of Lake Michigan, it is the eastern shore; and in that of Lake Huron, it is the western shore. In the case of Lake Erie and Lake Ontario this phenomenon does not appear so plainly. This feature can be explained by the two sorts of currents already mentioned, combined with the lay of the lakes as to the prevailing direction of the wind and the position of the outlet. In the case of Lake Superior the outlet is on the southern side. In the case of Lake Michigan the readiest access to the outlet is along the eastern shore, the access from other directions being barred by the group of islands near the northern end of the lake. In the case of Lake Huron the outlet is on the western side, as are also the inlets of the lake.

"In any case the drive of the water from one end of the lake to the other necessitates more or less a return current, providing the outlet is not sufficiently large to allow this water to pass through. In the Great Lakes the outlets are relatively small, so that in all these cases there must be return currents. Such currents will combine with the direct ones to make a large general whirl in the lake if the latter is sufficiently broad (Lakes Superior and Huron), or lies across the wind (lakes Huron and Michigan). If the lake has its long axis in the direction of the wind (Lakes Erie and Ontario), the return currents will break up into smaller whirls along the great pockets of the coast on either side of the general current. Around groups of islands a smaller return current, or a distinct swirl, will be set up.

"The direction of currents can be ascertained with much more precision by the observations than can the velocities. In the path of each bottle there are only two points that are fixed, the place of floating and the place of finding. The path between these two points is uncertain. The only certain thing about it is, that it cannot be shorter than the straight line which joins these two points, and it is probably very much longer. This increased length is due, in part, to the general curved motion of the currents, as they rarely pass in straight lines, and, in part, to the changes in direction of the currents due to the change of winds. It would probably be safe to say that the path of any particular bottle which passes over any considerable part of a lake is many times as long as the straight line which joins the point of floating to the point of finding.

"The time of the floating can be definitely fixed, but the time of finding is by no means necessarily the time at which the bottle landed on the shore where found. In a few cases it appears that the bottle was picked up in the water. In such cases the time of finding is as definite as the time of floating. In most of the cases the bottle was picked up on shore, and it may have remained there some days, or even weeks, and possibly some months before it was actually found.

"These matters make it very difficult to arrive at any satisfactory conclusions concerning the speed of the currents in the Great Lakes. The safest rule to follow, and the one which I have generally followed, is to take the case of bottles which have the longer path and have taken the shorter time to describe this path, to deduce from them the velocity per day, and to call this the minimum velocity for that particular current. Any lower velocity found in the case of other bottles would be probably due either to the fact that the bottles had lain for some time undiscovered, or to the fact that the path had varied with the varying direction of the wind. Assuming this as the minimum speed, it has been found that the currents of the Great Lakes, in a general way, vary in speed from 4 to 12 miles a day. In a few special cases, especially with short paths, very much higher velocities have been found, but these velocities are probably rather those due to the motion of the surface water as a whole. In some of these cases the velocity is as high as 30 or 40 miles per day. It is not at all improbable that the general surface motion of the lakes has a higher velocity than the 4 to 12 miles, but the only conclusion which it seems safe to draw from these observations, is, that the velocities are at least as high as the figures mentioned. An independent investigation of a current gave a velocity of from 1½ to 4 miles per hour, or 36 and 96 miles per day. The bottle papers gave for this current only about 10 miles per day.

"The general conclusions of this paper relate only to the greater currents of the lakes. These currents must be substantially as indicated by the 500 or 600 bottle papers which have been recovered. There will, however, be some modifications due to season and direction of wind, but these modifications will be superficial, while the regular currents of the Great Lakes which have been discussed in this paper must be fairly persistent. Many of the modifications will be found in the bays and at the extreme angles of the lakes, and these remain for further investigation.

"While the winds from the Great Lakes are westerly in their prevailing direction, this is the region of variable weather, and the actual directions of the wind change from day to day. There will, consequently be considerable variation in the currents from time to time, and this undoubtedly causes a wayward motion of the bottle papers.

"The most frequent winds on the Great Lakes, summed up by months, are in a number of stations, as follows:

MONTH.	N.	NE.	E.	SE.	S.	SW.	W.	NW
January	0	0	0	0	3	7	5	2
February	1	1	0	0	2	5	8	2
March	2	1	0	0	0	2	5	9
April	2	7	3	0	0	1	2	3
May	1	5	0	3	2	3	4	1
June	0	1	0	3	3	7	3	1
July	1	2	0	1	2	7	4	2
August	0	3	0	2	3	5	0	3
September	0	1	0	1	6	7	2	0
October	0	1	0	1	5	9	2	1
November	0	0	0	0	2	5	7	4
December	0	0	0	0	1	8	6	3
Year	7	22	3	11	29	66	48	31

"From this it appears that the total number of greatest monthly frequencies is 217, being 13 more than the product $12 \times 17 = 204$. This is due to occasional double equal maxima. Of these 217, 66 or 30 per cent. are winds from the SW.; 48, or 22 per cent. from the W.; and 31, or 14 per cent. from the NW.; this is 145, or 66 per cent., or two-thirds of westerly winds, for the whole year. If we take the months May to September, inclusive, the numbers are, N., 1; NE., 12, E., 0; SE., 10; S., 16; SW., 29; W., 13; NW., 7. This is 88 for these months, of which 33 per cent. are SW.; 15 per cent. W.; and 8 per cent. NW.; or 56 per cent. from a westerly direction.

"The resultant is westerly in 183 out of 204 monthly values and in all the annual values. Of the easterly resultants 6 are in April, 7 in May, and 5 in June.

"The westerly winds, in case of the lakes lying nearly east and west, would cause a surface current from the west which would be in the same direction as the body current. In the case of the lakes which lie across the direction of the wind, the surface drift would be from the west across the lake. The details of its direction would depend on where the outlet is, on the form of the lake, and on the position of the inlet. These cases will be found illustrated in Lakes Michigan and Huron."

MORE CANALIZING.

At a meeting of the Toledo directors of the chamber of commerce last week a committee was appointed to investigate the feasibility of a ship canal from Chicago to that city, shortening the distance from the west to the seaboard over 700 miles. The committee will also select a route for the canal and endeavor to demonstrate to the promoters of the proposed enterprise that it would be a profitable investment.

NO GOVERNMENT HARBORMASTERS.

Secretary of the Treasury Carlisle has declined the request from Chicago that the commander of the revenue steamer Calumet be given authority to act as harbormaster at that port. The Secretary points out that this would be an invasion of municipal authority, and it would lead to complications which the government has no desire to encounter. The collector of customs at Chicago explained the situation by stating that if the Federal government undertook to direct the wharfage the city might draw out entirely, and then the government would have to see to the dredging of the river and its entire supervision. This might ultimately lead to its taking control of the bridges, a course which would be very undesirable. The solicitor of the treasury gave an opinion that the jurisdiction of the Federal government extended to the channel of the river, and to that extent the captain of the Calumet will be authorized to act with the local authorities so far as possible in keeping the channel clear. The decision of the Secretary of the Treasury is said to give general satisfaction at Chicago.

GRAIN TRIMMING CHARGES.

A champion of the Erie canal, published we understand, in New York and aptly named *Canal Defender*, is credited with the following:

"At present no one knows just what rate New York boats will get on their arrival at Buffalo. Two years ago some boatmen refused 4½ cents, and got only 2¼ cents the first trip. Last spring about sixty New York boats were contracted for at 4 cents and the rate was firm at 5 cents when they arrived at Buffalo. According to present rail rates on wheat, New York boats ought to get 4 cents. Whether they will or not is a conundrum.

"In New York the established rate for shoveling grain to the leg of the elevator in canal boats is $1.50 per 1,000 bushels, while in Buffalo the rate for shoveling in vessels is $4 per $1,000 bushels.

"In New York canal boats are trimmed with 10 to 13,000 bushels of grain for $4, while in Buffalo the rate is $10 for only 8,000 bushels. Therefore, the rates in either case are two and a half times as much in Buffalo as they are in New York. Another important fact against Buffalo is that there is not half as much labor in shoveling grain to the leg in vessels as there is in canal boats.

"To cap the climax, the rate for shoveling grain to the leg of the elevator in Buffalo is double the rate in any other port on the lakes. And why Buffalo grain scoopers should demand ¼ of a cent a bushel more than is paid in New York, has been severely criticised for years."

CORRESPONDENCE.

☞ We do not hold ourselves responsible in any way for the views or opinions expressed by our correspondents. It is our desire that all sides of any question affecting the interests or welfare of the lake marine should be fairly represented in THE MARINE RECORD.

DEPTH OF WATER AT LAKE PORTS.

BAY CITY, MICH., April 16, 1894.

To the Editor of The Marine Record:

I notice in your issue of April 12, under head of "Depths of water at lake ports," that you quote the depth of water at Grand Marais, Mich., at 13 feet 6 inches and Grand Marais, Minn., at 16 feet. I am deeply interested in the welfare of the former port and know from personal knowledge that last fall there was not less than 16 feet of water in the channel leading to Grand Marais Bay from Lake Superior, and it strikes me that you have these two points in conflict by quoting the depth of water at Grand Marais, Minn., that ought to be credited to Grand Marais, Mich. I only call your attention to this so that Grand Marais, Mich., may be correctly reported should you kindly make the correction in your next issue. VERITAS.

In condensing the necessarily inclusive report of the Chief of Engineers, U. S. Army, we gave briefly the limit of soundings and the least depths at low water at all lake ports enumerated. In this instance we reproduce literally the statements made against each of the ports in question by the Chief of Engineers:

"Grand Marais, Mich.; After dredging in 1891 there was an available channel 175 feet wide and 17 feet deep at entrance. Soundings taken in May, 1893, showed that a shoaling had occurred, leaving a least depth of 13.6 feet at low water. The east pier of entrance was extended 300 feet in 1893."—Chart No. 1, Lake Superior.

"Grand Marais, Minn.; Original depth inside 5 to 15 feet. January, 1894.—The breakwater extends 350 feet from east side of entrance. The anchorage basin was enlarged some last season by dredging, and is now about 23.5 acres in extent with 16 feet at low water."—Chart No. 3, Lake Superior.

We are, however, pleased to learn that 16 feet could be carried to Grand Marias, Mich., last fall and ask those who are placing the depths as quoted in our columns from the bulletin to * this port until later advices shows what the actual prevailing depth is this spring. Our correspondent has the advantage of the Corps of Engineers in taking his soundings in the fall of 1893, whereas the depth of 13.6 feet, as issued in the bulletin, was taken in May, 1893.—[ED.

MARKING VESSELS' NAMES.

DETROIT, MICH., April 16, 1894.

To the Editor of The Marine Record:

Is it not compulsory to have a vessel's name painted in white letters on a black ground or in black letters on a white ground? What is the ruling on this subject?

SUBSCRIBER.

The names of every documented vessel (yachts excepted) shall be marked in full upon each bow and upon the stern and the home port shall also be marked in full upon the stern. These names shall be painted, or carved and gilded, in Roman letters in a light color on a dark ground or in a dark color on a light ground, and to be distinctly visible. The letters used shall not be less in size than four inches. If any vessel of the United States shall be found without these names so marked the owner or owners shall be liable to a penalty of $10 for each name omitted. Every steam vessel of the United States must in addition have her name conspicuously placed in distinct plain letters of not less than six inches in length on each outer side of the pilot house, if it has such, and in case the vessel has side-wheels, also on the outer side of each wheel-house, under the same penalty as provided above.—[ED.

TO APPEAL THE CASE.

The Northern Steamship Company will appeal the suit in which Capt. Andrew Hackett is plaintiff, and in which he was awarded $8,000 by the Canadian courts. Referee Marcon, of Windsor, has been hearing testimony on Hackett's claim for several weeks, and gave a decision in Hackett's favor for $8,000 and costs, the latter amounting to $2,000 or $3,000. The Northern Steamship Co. regard the verdict as excessive. It will be remembered that the Canadian government had declared the wreck of the schooner Fayette Brown, which lay in Canadian waters, to be an obstruction to navigation, and after the lapse of a short time had awarded to Capt. Hackett the job of removing her. The Northern Steamship Company, who had already settled with her owner, M. A. Bradley, for the loss of the schooner, claimed she was their property, and enjoined Capt. Hackett from doing further work on her. He then claimed to be entitled to pay for what he had already done, and the court decided in his favor, turning the case over to a referee, to decide the amount of the award, which was decided as above.

THE MARINE RECORD

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CLEVELAND, O., APRIL 19, 1894.

THE equitable taxation of vessel property by the general government, as opposed to the local taxation by state or county is likely to be brought forward in the near future. It is to be hoped that these endeavors may bear fruit and such taxation be done away with in all the states, instead of as at present, a taxation by a part of the maritime states only, thus effecting a discrimination in the ownership of floating property.

NOTHING that has taken place for years has so stirred up the sailing community on the lakes as the order promulgated from Washington informing masters and pilots that passing signals are totally unauthorized in fog, mist or falling snow, and that any other than the bare fog signal of one blast is prohibited and illegal. The enforcement of such a law, will, it is confidently stated on all sides, be laden with imminent danger and prevent navigation in thick weather. The Shipmasters' Association, as well as the finance and legislative committees of the Lake Carriers' Association have taken the subject up and we trust that a proper decision in this important matter will obtain. Evidently, for this season at least, the fog signals for meeting, passing and crossing vessels will be used on the lakes irrespective of the findings of departmental, legal or association rulings to the contrary or otherwise.

PASSING SIGNALS IN FOG.

Again has the Board of Supervising Inspectors of Steam Vessels "put their foot in it" and alarmed the lake marine fraternity by issuing department circular No. 36, relative to fog signals.

It is, or should be well known that the passing signals which the supervising inspectors have drilled into lake masters and pilots is strictly observed in all cases, not excepting fog, mist or falling snow, so that a steamer can't be given helm when in the vicinity of another craft without giving a blast of her steam whistle for port helm and two blasts when going under starboard helm, this, too, independent of how the vessels are proceeding in a fog, or whether sighted or not.

All the ingenuity of the maritime world has been brought to bear for years in endeavoring to evolve a caliope system of tuning with a series of distinctive notes to indicate over what quadrant of the compass a steamer may be proceeding in thick weather, but up to this time each and every plan has been thrown overboard, chiefly on the plea of complications being likely to arise through a confusion of the sounds; hence, no acceptable code of passing and steering signals in thick weather has ever been devised. The exigencies of lake commerce called for men who could get steamers over the ground as well in foggy as in clear weather, and being thoroughly posted in the single and double toots for clear weather passing signals, nothing was easier than to adopt the same for thick weather, and such has been the universal custom since steam navigation began on the lakes.

The assinine, if not lunatic and totally unnecessary rules issued by the board of supervising inspectors of steam vessels are solely responsible for this custom which has now almost assumed the full force of a law on the subject, inasmuch as it is rigidly observed in all classes of steam tonnage. When, lo and behold, out crops the following order on the opening of navigation:

"In fog, mists, or falling snow, when vessels cannot see each other, fog signals only may lawfully be given, and pilots should, upon hearing the fog signal of another vessel, ahead, or on either bow, run slow, with frequent stoppages, until the fog signals of the opposing vessel are heard abaft the beam."

Now, with all due regard to the legislative and compulsory examination powers of the department having the steam tonnage of the country under its control, how has this system ever been allowed to gain the force of law through long continued usage? Have local inspectors issuing licenses to officers permitted the use of such signals and granted licenses accordingly? Is it possible to continue longer in office men who from their own showing are too dense to construe the laws applicable to the "Rules of the Road" and yet are in a position to flood the lakes with incompetents? On the subject of a revision and codification of the pilot rules for lakes and seaboard, THE RECORD has dwelt persistently, though with but scant success in having the measures advocated properly considered, and in this crisis, we have neither the leisure, space or inclination to reproduce past articles on this subject condemning the rules and diagrams as now printed, further than to say that it seems almost an absolute necessity that the law be suspended and lake steamers given the right to use passing signals in a fog for at least this season or until all pilots became thoroughly aware of the new system to be observed.

LAKE SUPERIOR—MISSISSIPPI CANAL.

Representative Kiefer, of Minnesota, is taking an active interest in the proposition for a survey for a canal between the waters of the Mississippi river and Lake Superior. He has already introduced a bill asking an appropriation of $10,000 to make his survey. Mr. Kiefer says that the construction of a canal between these waterways comprehends a great revival of river navigation, and if successfully carried out will enable a boat to load at Superior or Duluth and all intermediate points and carry its freight to New Orleans one-third lower than the shipper, producer and consumer have to pay now.

In furtherance of the project a committee of the chamber of commerce called on Prof. Winchell, state geologist of St. Paul, for information on the water supply for the eastern end of the ship canal, the congressional committee on canals being doubtful of the sufficiency of the water supply. A letter received from Prof. Winchell states that the probable route of the canal is a tract of lake country of ten square miles, easily accessible and convenient for use, which has water "abundantly sufficient to feed the canal on the divide and at all lower stations, of course there is still more water available from the larger streams."

EXPIRATION OF INSPECTION CERTIFICATES.

Steamers in the several lake districts whose certificates expire from April 22 to 30, are as follows:

CHICAGO, ILL.

Viva,	Apr. 22	Post Boy,	Apr. 26
Wm. Dickinson,	" 22	Sailor Boy,	" 26
Fayette,	" 22	Soo City,	" 26
Delaware,	" 24	Emma E. Thompson	" 27
Conestoga,	" 24	City of Traverse,	" 27
Lehigh,	" 24	Jay Gould,	" 27
Juniata,	" 24	Peerless,	" 27
Argonaut,	" 24	Viola,	" 27
John F. Eddy,	" 24	Calumet,	" 27
Abyssinia,	" 25	I. and M. C.,	" 28
Austria,	" 25	Victor,	" 28
Albania,	" 25	W. P. Thew,	" 28
Arabia,	" 25	Chief Justice Waite,	" 28
Asia,	" 25	John Torrent,	" 29
Alaska,	" 25	Crawford,	" 29
Osceola,	" 25	J. V. Taylor,	" 29
Oneida,	" 25	Josie Davison,	" 29
Okoboji,	" 25	Fred Kelley,	" 29
Arthur Orr,	" 26		

BUFFALO, N. Y.

Allegheny,	Apr. 22	Nyack,	Apr. 26
H. J. Warren,	" 22	Japan,	" 27
John M. Nichol,	" 22	China,	" 27
James Byers,	" 24	India,	" 27
S. C. Baldwin,	" 24	Geneva,	" 27
Wyoming,	" 24	Frank Mattson,	" 28
Lycoming,	" 24	Pearl,	" 28
E. B. Hale,	" 25	Will R. Beckman,	" 28
Otsego,	" 26	W. H. Hill,	" 28
Mark Hopkins,	" 26	Lackawanna,	" 28
H. S. Pickands,	" 26	International,	" 29
Cormorant,	" 26	St. Louis,	" 29
George L. Colwell,	" 26		

CLEVELAND, O.

Active,	Apr. 22	Masaba,	Apr. 26
Erie,	" 22	Yuma,	" 27
Egyptian,	" 22	E. M. B. A.,	" 27
Trio,	" 22	Clio,	" 28
Butcher Boy,	" 22	Launch 134,	" 28
Surprise,	" 22	Peerless,	" 28
Empire,	" 24	Elfin Mere,	" 28
Alcona,	" 24	R. T. Roy,	" 29
N. K. Fairbank,	" 26	Edward S. Pease,	" 29
Manola,	" 26	H. L. Chamberlain,	" 29
Mariska,	" 26	Helene,	" 29
Marina,	" 26	Henry J. Johnson,	" 29

TRANSFERS OF VESSEL PROPERTY.

The following transfers of vessel property have been recorded at the Milwaukee customs office:

Schooner C. Harrison—Jens Ellingsen to Jacob C. Olson, of Milwaukee, one-fourth, $150. Same vessel—Jens Ellingsen to Thomas Harrison, of Milwaukee, one-fourth, $150. Schooner Challenge—Charles W. Perry, of Pierpont, Mich, and Jacoh E. Jacobson, of Milwaukee to Edwin W. Drake, of Milwaukee, the whole, $1,300.

THE NEW GOODRICH BOAT.

At the annual meeting last winter it was decided by the Goodrich Line to build a new steamer, which would be about the dimensions of the Atlanta and constructed of steel. It was intended to have the new boat ready for the opening of navigation in 1895. Frank E. Kirby, the marine architect of the Detroit Dry Dock Co., is preparing plans and specifications for the new boat. The Detroit Dry Dock Co. built the Graham & Morton Line steamer Chicora, as well as many big lake carriers. Steel has been chosen for the material on account of the decreased cost, as steel boats can now be built for 25 per cent. less than they could a year ago.

Relative to the new contract a dispatch from Chicago to THE RECORD states as follows: "No contract has yet been made for the new steamer. Specifications are being prepared by Frank E. Kirby, of Detroit, for a steel side-wheel steamer about 220 feet over all, 60 feet beam over guards, and 12½ feet depth of hold, double tier of state rooms and all modern improvements."

ACTION FOR NEGLIGENT TOWING.

Emery J. Vance, of Bay City, owner of the schooner Midnight, lost near Fish point in November, 1889, has libeled the propeller S. S. Wilhelm in the United States district court for $21,984.42 damages.

Mr. Vance alleges that on November 26, 1889, the Midnight left Ford City, Mich., in tow of the propeller Wilhelm. She was loaded with lumber, and the Wilhelm also had the schooner Mears, the Midnight towing astern of the Mears. When they left Ford City the intention was to stop at Tawas and take the barge Crosthwaite in tow.

About 4 a. m., November 27, while the tow was abreast of Thunder Bay light, the sea became so heavy as to roll part of the Midnight's deck load of lumber overboard. The Midnight put a red light in her rigging as a signal of distress. The duty of the Wildelm, it is alleged, was to immediately tow the Midnight to a place of safety. No attention was paid to the signal, however, and no effort made to take the schooner into Thunder bay, which was easy of access and would have afforded a safe harbor.

The propeller, ignoring the Midnight's signal of distress, the evident condition of the schooner, the increasing violence of the storm and the unmistakable portents of the weather, it is alleged, kept on down the lake, holding the heavy wind and sea nearly abeam, and exposed herself and tow to the full fury of the tempest. About 6 a. m. rain and sleet began to fall, and in a few minutes became a furious snow storm. The propeller was then almost ten miles below Thunder bay light and could still have made a safe harbor, but continued to hold her course down the lake, running nearly in the trough of the sea.

About 8 a. m., the wind then blowing 40 miles an hour, the sea running high, in a few minutes swept away one side of the propeller's deck load. Then she came about and hauled up into the wind, thereby losing the remainder of her deck load. She lay heading into the wind about an hour, in which position she rode safely with her tow. Then she came around again and went ahead, hauling in toward the land, and the schooner Mears began to lose her deck load. The propeller, making no allowance, it is alleged, for leeway, continued on a course which brought her dangerously close to the land until about noon, when she had brought herself and tow into the breakers near Fish Point, on the west shore of Lake Huron, near Thunder bay, when without checking speed she came out so sharply into the lake under a starboard wheel so as to part the tow line. Before either the Mears or the Midnight could let go an anchor, both struck heavily and stranded hard and fast near Fish Point, where they were soon broken up by the sea and became total wrecks. One seaman on the Mears died from exposure, and the other members of the two crews were rescued with great difficulty. The disaster is attributed to negligent towing.

TAXING VESSEL PROPERTY.

From the Maritime Register, New York.

We publish in another part of this issue a report from THE MARINE RECORD, Cleveland, O., of a tax case in which a vessel owning company is ordered by the court to pay taxes at its principal place of business, although it declares that its chief office is in another township. The judge, it will be noticed, says that the laws of the State make the vessel property taxable where the principal office of the transportation company is situated, and he holds that practically this office is where the bulk of the office work of the company is done, despite the statement that the main office may be somewhere else. It is, of course, well known that many corporations seek to evade State or local taxes by organizing in another State than that in which their main business is carried on, or in declaring their offices to be in some neighboring village or town than that in which their chief business is managed. It is for the same reason that the

wealthy business man declares his chief residence to be in some little up country town, although he really lives two-thirds of the year in the city in which he does business and where his chief interests are centered. The judge in the case before mentioned is evidently inclined to take a common sense view of the matter and the decision is of interest even though the case will be appealed to a higher court. It helps, however, to bring out more prominently the questionable wisdom of laws that drive business concerns that directly and evidently benefit a city, to resort to such means of evasion of taxes that really bear too heavily upon them.

A point made by the transportation company in the case before mentioned, was testimony to show that if its vessels were taxed by the city of Detroit it could not successfully compete with transportation lines organized in other states where property was not taxed. This argument naturally had no weight with the court. But it is one that should be seriously considered by Detroit and every town or state that levies taxes upon vessel property. As every advantage, benefit or protection that a town can give to a vessel is well paid for by that vessel indirectly, through whatever it brings into a town through port charges, wharfage dues, or the innumerable ways that the ingenuity of town authorities devise for mulcting a vessel, as the town has practically no jurisdiction over a vessel, no matter where the vessel may be owned, it appears to be a senseless proceeding to inflict local taxes upon the vessel. It simply results in one of two things, either in driving capital away from vessel property, or compelling the owner of the property to seek residence in other places where more liberal views exist. Taxation of the profits of a vessel owning company, or a vessel owner in the place of residence is equitable. Beyond that, taxation of vessel property should not go. Neither state, county nor town controls navigable waters, and upon these is the vessel used. Whenever necessary these are kept in condition or safeguarded by federal, and not by state authorities, and the terminals used by vessels are already taxed. The vessel brings business to a town and uses nothing in the town that is not already taxed, and gets nothing from the town, for the latter has nothing to give the vessel.

MARITIME LAW.

KANTER v. STEAMSHIP ITALIA.

DAMAGE TO CARGO BY RATS—LEAD PIPE GNAWED—LIABILITY—BILL OF LADING—EXCEPTIONS—"VERMIN."

Cargo was damaged on the steamship Italia by water which escaped through a hole in lead pipeing, gnawed by rats. Rats had twice before injured the lead pipe of the ship. Prior to the departure of the vessel, the usual precautions against rats were taken, by washing and fumigation, *Held*, that in view of the previous damage done by rats, especial efforts should have been made to exterminate them; failing which the ship was liable.

When it is found that rats on a vessel cannot be subdued, reasonable prudence requires that lead pipe, which is subject to gnawing by rats, should be protected by some hard metal covering.

A bill of lading contained the usual exceptions, including "vermin." Cargo shipped under such bill of lading having sustained water damage, caused by rats gnawing lead pipe, it was *held*, (not deciding whether the word "vermin" in a bill of lading should be understood to include rats, that the exception did not absolve the vessel from lack of reasonable diligence in the equipment of the ship and in due precautions to prevent injury to cargo.

The libel was filed to recover for water damage to a cargo of cement brought to this port by the steamship Italia, on her voyage from Stettin, in June, 1893. The damage was caused by fresh water, which, in the re-filling of the fresh water tank during the voyage, had escaped through a held gnawed, doubtless, in the fresh water pipe by rats. The pipe led from the top of the water tank in the hold upwards through the deck above. The pipe was encased in a box of wooden plank, to protect the pipe from the cargo which was stowed around it. To supply the passengers with an abundance of water during the warm weather of the passage, the fresh water tank was re-filled during the latter part of the voyage, on the night of 17th to 18th June. When the pumps were sounded at 6 A. M., of the following morning, four feet of fresh water were found in the hold of that compartment. On examination after arrival in port, a hole about three inches long was gnawed in the lead pipe, just above the fresh water, and a dead rat lying by it. There is no doubt that the water in the hold escaped through this hole while the tank was filling during the night of the 16th. The ship during the voyage was infested with a very unusual number of rats. Twice before, as the evidence shows, lead pipe encased in a similar way, had been eaten by rats, on the same ship.

The claimant's evidence is to the effect that the usual precautions were taken to free the ship from rats before she sailed from Stettin, by washing, and by fumigating the ship with sulphur. This was not considered, however, as wholly effective, as appears from the testimony of the chief officer:

"Q. Did you believe she was pretty free from rats in Stettin after you finished fumigating her? A. No I don't think so.

"Q. Isn't it possible to get all rats out? A. No, that is impossible. The rats travel along on ropes on the stages, get aboard all the time. There is no ship in the harbor without rats. This is not the only pipe they have eaten through."

The bill of lading contains the usual exceptions, including perils of the seas, vermin and negligence of the master or other servants of the ship owner, but it does not except rats by name.

Whether the term "vermin" in a bill of lading should be held to include rats, it is not necessary here to decide; because none of the exceptions, in the bill of lading absolve the vessel of her owners from the lack of reasonable diligence in the equipment of the ship before the commencement of the voyage, or in due precaution to prevent injury to the cargo. Steel vs. S. S. Co., 2 App. Cas. 72; Tatersall vs. S. S. Co., 12 Q. B. Div., 297 Stevens vs. Navigazione, etc., 39 F. R., 563; The Caledonia, 43 do., 681; The Rover, 36 do., 515 aff'd 41 to 58. Considering the well known liability of lead pipe to be gnawed by rats, when present, of which previous examples are not wanting in the reported cases (The Euripides, 52 Fed. Rep. 161; Hamilton v. Pandorf, 12 App. Cas. 518); and that on this vessel twice before the lead pipe had been eaten by rats, though encased in similar planking, I think that when it was found that the rats could not be subdued in this ship, reasonable prudence should have been taken at the ports the ship was in the habit of touching at, that notwithstanding such previous efforts rats would still infest the ship to such an extent as the testimony shows on this voyage. It seems to me that it was the duty of the owners in the equipment of the ship, and in the preparations for the voyage, to protect the water pipes effectively against rats wherever they were a manifest source of danger to the cargo. Either of several preventives could have been easily adopted at comparatively small expense, which would have afforded adequate protection.

Decree for libellants, with costs.

New York, Dec. 28, 1893.

TEST OF UNITED STATES DREDGE "RAM."

A powerful self-propelling suction dredge has recently been built by the Bucyrus Steam Shovel & Dredge Co., of South Milwaukee, Wisconsin, for the Mississippi River Commission, Fourth District. The dredge was built on the Ohio River, and proceeded to its destination in Louisiana under its own steam, making a speed of seven miles per hour, towing eleven pontoons. The test for capacity took place under supervision of Capt. John Millis, on the part of the Government, and Mr. A. W. Robinson, on the part of the builders. The volume of discharge was measured by diverting the steam into water tight bins upon a large flat scow, fitted with suitable sluices and gates. Samples of the discharge were taken in this way for periods of thirty seconds every half hour during the test. At the conclusion of the test the contents of the bins were allowed to settle undisturbed for forty hours, and were then accurately measured. Then the water was drawn off and the residue measured. This residue was found to consist of semi-fluid mud on top, and solid material in the bottom, and was therefore measured separately, with results as follows: Duration of measured trial, 3 hours; total time pumping into scow, 3 minutes; total measured volume, 70.76 cubic yards; volume of residue after settling 40 hours, 38.37 cubic yards; per centage, residue total volume, 54; rate of discharge of residue, cubic yard, per hour, 777; volume of semi-fluid mud drawn off after 40 hours, 16.37 cubic yards; volume of solid matter left, 22 cubic yards; semi-fluid mud reduced to solid material, 9.82 cubic yards; total solid material discharged in 3 minutes, 31.82 cubic yards; percentage of above to total volume, 45; rate of discharge of solid material, cubic yards, per hour, 636.4.

The dredge was making a cut 100 feet wide and 14 feet deep, discharging 10 feet, 6 inches above the water at the prescribed distance, and the result, as will be seen, was more than double the guarantee. This large output was abtained steadily, and no attempt was made to sort the material. In this dredge the material is excavated and fed uniformly and continuously to the pump by a rotary steel cutter head of improved form, so that the pump and pipe is always worked up to its maximum carrying capacity, and the percentage of solid matter under perfect control. The dredge was built from the designs of Mr. A. W. Robinson, the Chief Engineer of the Bucyrus Co.

THE superintendent of the Sturgeon Bay canal says there is nearly 13 feet of water in the canal this spring and vessels drawing 12½ feet will find no difficulty in passing through. The government dredge will probably remain throughout the season, or until a uniform depth of 16 feet of water has been attained the entire length of the canal.

DEPTHS OF WATER AT LAKE PORTS.

(CONTINUED FROM LAST ISSUE.)

Menominee Harbor, Mich., and Wis.; Parallel piers 400 feet apart, channel, 200 feet wide and depth from 17 to 18 feet. The depth to be maintained is 16 feet. River—For a distance of 9,200 feet up the river, 15 to 17 feet. Improvements to give a channel 16 feet deep for 2 miles up the river now in progress.

Michigan City, Ind.; Between piers 100 feet, depth at entrance 18 feet, inner harbor 12 feet, increased temporarily by dredging to 13 feet.

Milwaukee Bay, Wis.; anchorage area, 417 acres, depth 36 feet. Harbor, 190 feet wide, available depth entrance channel 15.5 feet. November 29, 1893, outer bar, 20 feet.

Oconto, Wis.; Inside the shore line for 8.200 feet a depth of about 8 feet. Project to give 8 feet to Green Bay, a distance of 2 miles.

Pensaukee, Wis., May, 1890. The governing depth 2.8 feet.

Pentwater, Mich., August, 1893. 13 feet frequent dredging required to keep above 10 feet.

Petoskey, Mich.; Depth at head of pier, 14 feet, improvements contemplated.

Portage Lake, Mich.; Narrow channel, 8.5 feet deep, to be further dredged this season.

Port Washington, Wis.; Governing depth in the entrance channel 11.5 feet. Improvements in progress for 12 feet.

Racine, Wis.; Channel 80 feet wide, 16 feet deep in June 1893, though possibly shoaled since. Improvements in progress for a channel 16 feet deep.

St. Joseph, Mich.; Available depth in St. Joseph and Benton Harbor Canal 12 to 13 feet, maintained by occasional dredging. To Berrien Springs 25 miles, 3 to 4 foot channel exists.

Saugatuck, Mich.; Piers and revetments in ruinous condition, depth outside south pier, 7 to 8 feet, thence, to 8 feet above bend in Kalamazoo river, 4 or 5 feet. Navigable depth in Kalamazoo river, from this section to Saugatuck, 8 feet.

Sheboygan, Wis.; Channel 100 feet wide, 17 feet deep. Extension of piers and 18 feet draft is in progress.

South Haven, Mich.; Frequent dredging required to maintain a depth of 12 feet between piers and in river.

Sturgeon Bay, Harbor of Refuge, Wis.; Governing depth, 15.2 feet. Canal 14.5 feet November, 1893.

Two Rivers, Wis.; Channel 120 feet, 13 feet deep. The least width between piers is 240 feet. Improvements noted as being in progress to maintain piers at 240 feet apart and a depth of 12 feet.

Waukegan, Ill.; Governing depth last April, 12 feet near the north pier, probably shoaled since. Extensive improvements in progress.

White Lake, Mich.; Width between piers, 200 feet, depth 15 feet. Depth in White Lake 25 to 60 feet.

LAKE HURON.

Au Sable, Mich.; Channel 120 feet wide, 10 feet deep in 1889, reported to have since shoaled.

Cheboygan Harbor, Mich.; Channel to first bridge 13 feet.

Saginaw River, Mich.; Dredged to 14 feet, 200 feet wide. On account of low stage of water it is not safe to cross the bar drawing over 13 feet, available depth of 14 feet from mouth of River to Portsmouth Bridge at South Bay City, a distance of six miles, thence to the head of navigation, 12 feet depth. The west channel along to Bay City has been dredged 12 feet deep and 75 feet wide.

Sand Beach, Mich.; Anchorage area bounded by the main pier and a line from 400 to 500 feet west of it gives 20 to 28 feet depth of water. The east or main entrance has been dredged to a depth of 21 feet, and the north entrance will be dredged to the same depth this summer, but at present it is not safe for anything drawing over 15 feet.

Sebawaing Harbor, Mich.; Present available depth not over five feet.

Thunder Bay Harbor, Mich.; Channel 150 to 200 feet wide, 16 feet deep. River to Miner Lumber Co.'s saw mill the same depth, 75 to 100 feet wide.

Foot of Lake Huron (South End); Available depth at ordinary stage of water 17 feet. The improvements now in progress will give a channel 2,400 feet wide and 21 feet deep.

ST. CLAIR RIVER.

Belle River, at Marine City, Mich.; Dredged channel 50 feet wide from mouth to first bridge, 13 feet deep, thence to Broadway Bridge 12 feet. Available depth at present 11 and 10 feet respectively.

Black River, at Port Huron, Mich.; Channel 50 to 150 feet wide, 16 feet deep, available depth at present scant 15 feet.

Pine River, at St. Clair, Mich.; to the ship yard, 10 feet deep, thence to Belknap's brick yard 5 to 8 feet over bars.

St. Clair River, at Port Huron, Mich.; the bar at mouth of Black River has been removed to a depth of 16 feet from the 16-foot curve above to the 16-foot curve below a width of 650 feet from the wharves of Port Huron. The present project provides for 18 feet to the middle of St. Clair River.

LAKE ST. CLAIR.

Clinton River, Mich.; Channel 50 feet wide, 10 feet deep. Along the north side of the channel of entrance in Lake St. Clair and a channel 75 feet wide and 8 feet deep from this point to the Mount Clemens Bridge 8½ miles.

Grosse Point Channel; Available depth, ordinary stage of water 16 feet, improvements in progress for channel 800 feet wide and 20 feet deep.

St. Clair Flats Canal; At ordinary stage of water 18 feet. Work in progress to give 20 feet.

DETROIT RIVER.

Detroit River, bar at mouth. Available depth 16 feet.

New channel will give 21 feet, 800 feet in width.

Limekiln Crossing; Width 440 feet, depth 20 feet.

Between Ballard's Reef and Limekiln Crossing, January, 1894. Available depth 17 feet at ordinary stage.

Rouge River; Dredged to 16 feet to St. Louis & Wabash R. R. bridge, probably shoaled on this depth since dredging was completed.

LAKE ERIE AND NIAGARA RIVER.

Ashtabula, O., August, 1893; Depth outside of piers 17 to 21 feet for width of 213 feet. Channel between piers 17 feet. Sides of channel decrease to 14 feet. Shifting sands causes the depths to vary from time to time.

Black River, O., June, 1893; Fourteen-foot bar formed on line of east pier 500 feet into the lake, extending half way across entrance, 17 feet deep on west half of entrance, varying depths on account of shifting sands.

Buffalo Harbor, N. Y.; Outer harbor not less than 23 feet. The Buffalo River and Blackwell Canal dredged by the city to 18 feet at low water, which gives about 19 feet at mean lake level. Actual depth allows about 16 feet draft.

Cleveland, O.; Channel 500 feet wide, 20 feet deep at entrance, from breakwater to mouth of piers 19 feet full width of channel between piers, there is generally a 17-foot channel from 50 to 100 feet wide shoaling on sides to 14 or 15 feet, west anchorage basin dredged in 1893, to 19 feet for a width of 600 feet. Deposits from river and lake causes depths to vary from time to time.

Conneaut, O.; The railroad interests have dredged a channel of 17 feet and repaired old piers. Shifting sands cause depths to vary.

Dunkirk Harbor, N. Y.; Channel 100 feet wide, 11 feet deep. Dredging this spring will give 13 feet.

Erie Harbor, Pa.; Width of channel 250 feet and not less depth than 17 feet at mean lake level.

Fairport, O., June, 1893; There was a bar with 14 feet on line of east pier and 1,400 feet outside. On line of west pier the bar was 1,100 feet outside covered with 12 feet. The channel lay between these bars 20 feet deep on line of channel between piers, at piers 19 feet deep full width of channel. These conditions were caused partly by dredging, but mainly by freshets, May, 1893 Usually 17 feet channel.

Horseshoe Reef, Niagara River, N. Y.; Has a depth of 16 feet for a width of 250 feet. Same draft over Strawberry Reef 400 feet wide. Will be improved this year.

Huron, O.; Good 17 feet depth between piers, though somewhat varying through shifting sands.

Monroe, Mich.; To end of piers on line of north pier, 8 to 9 feet bar makes up from southward with 7 feet depth. Deep water in canals; 8 to 9 feet in river to docks, depths vary but little from year to year.

Port Clinton, O.; Channel 100 feet wide, 10 feet deep, 1,400 feet outside piers on range of the end of west pier and old light-house, a pile of stone with only 6 feet of water over it will be removed this summer. Depths at this harbor hold well from year to year.

Sandusky Harbor, O.; Depth over bar varies from 15 to 18 feet and from 75 to 200 feet in width. Old channel to wharves 13 to 16 feet deep. New straight channel from Cedar Point to B. & O. R. R. wharves will be completed this year, 200 feet wide and 17 feet deep. Present depth 17 over width of 90 feet. River dredged last year to 10 feet, 50 to 75 feet wide. Least depth from Sandusky Bay to Fremont 9 feet through to L. S. & M. S. bridge, 8½ feet.

Toledo, O.; Depth in old channel now marked by range lights only, is 11 to 16 feet. Depth in new straight channel from Maumee river to deep water of Lake Erie, now marked by buoys and the old crib lights, is 17 feet on the axis shoaling to 13 and 14 feet inside, 200 feet wide. Outside of cribs full depth of 17 feet dredged last summer, except for 1000 feet at lake end which now has 16 feet, all of which will be dredged this year to full depth. Depth in river 20 feet and better except at crossing above Craig's shipyard, where it is 16 feet, this will also be deepened this year.

Tonawanda Harbor, N. Y,; There is 16 feet between the island and main shore, except within 50 feet from the dock fronts.

Vermillion, O.; Steady depth 11 to 12 feet between piers.

LAKE ONTARIO.

Charlotte, N. Y.*; Channel 350 feet wide, 16 feet deep, depth in open lake outside piers 2 to 3 feet less. Proposed to extend piers, and dredge to a regular depth of approach.

Great Sodus Bay, N. Y.*; Channel 100 to 150 feet wide with not less than 13½ feet at extreme low water on December 1, 1893. This channel is not parallel to west pier as formerly, but runs from the outer end of west pier diagonally across the space between pier to 50 feet off the inner end of east pier. It is proposed to widen and deepen this cut to 16 feet.

Little Sodus Bay, N. Y.*; Last year a least depth of 14 feet at extreme low water was dredged a good 40 feet wide, by making a cut 30 feet off the west pier extending from deep water in the bay to deep water in the lake, about 300 feet outside the west pier. The bottom is hard pan with embedded stones. It is proposed to give a clear 16 feet depth at this point at extreme low water.

Oak Orchard, N. Y.; Channel 13.5 feet deep at mean lake level between the piers, except within 10 feet of the piers.

Olcutt, N. Y.; Channel 13.5 feet between the piers, except 10 feet from the piers.

Oswego, N. Y.; Outer harbor and entrance, 18 feet at extreme low water, sandy bottom. The inner harbor improved 1893 so as to give 15 feet depth at extreme low water up to the Northwestern elevator and to the coal trestles slip. There are, however, the two pieces of loose rock with 13½ feet depth at low water left in the approaches to the N. Y. O. & W. R. R. coal trestle.

Pultneyville, N. Y.;* There is 10 feet through channel to wharves and warehouses on the inner basin, which is perfectly land-locked and sheltered.

Wilson Harbor, N. Y.; Depth of channel 12 feet for 100 feet wide near the west pier, except rock bar across mouth with only 9.5 feet.

* Masters should observe that the depths are here given for Lake Ontario harbors as "extreme low water level." The level of the lake surface has reached this extreme low stage, during the season of navigation, only once during the past 20 years, and the depths are usually from 1 foot to 3 feet greater than here stated; "mean lake level" being 2¼ feet above "extreme low-water level."

ST. LAWRENCE RIVER.

Ogdensburg, N. Y.; Present condition, 16.5 feet depth with least width of 150 feet from lower end to the dock of the R. W. & O. R. R. on the west side of the Oswegatchie river. From this channel a narrow cut of same depth extends along the east bank of the Oswegatchie to the lower side of Hall's coal dock, and another cut 30 feet wide and of the same depth, extends along the west bank to Rodee Bell & Co.'s elevator, through entrances at the upper and lower ends 16.5 feet can be carried from the river into the deepened area.

St. Lawrence River, above Ogdensburg, vicinity of Chippewa Bay; Of the shoals indicated on the last edition of charts 4 and 5 St. Lawrence river, the following have been removed to 18 feet at low water: Upper or Haskell Shoal, also a spur of the above ¼ mile SS. W. ½ W. from it; Blind Bay Shoal, a little above the entrance to Blind Bay.

Corps of Engineers, U. S. Army. Surveys Northern and Northwestern Lakes. Bulletin No. 3, to supplement the information given upon the charts of the Great Lakes, and will be issued with those charts from the office of Col. O. M. Poe, Corps of Engineers, 34 West Congress street, Detroit, Mich. All previous bulletins should be destroyed.

NOTE.—This bulletin may also be obtained, upon application, from the following U. S. Engineer Offices: Cleveland, Ohio, Hickox Building, 185 Euclid Avenue; Detroit, Mich., Telephone Building; Milwaukee, Wis., 366 Milwaukee Street; Buffalo, N. Y., 121 Franklin Street; Duluth, Minn., Chamber of Commerce Building; Chicago, Ill., 2258 Wabash Avenue; Burlington, Vt., 8 Church Street; Oswego, N. Y., Second National Bank Building.

THE DUNKIRK WATER-CRIB.

Thacher & Breymann, submarine engineers and contractors, Toledo, O., are engaged at Dunkirk, N. Y., in completing the 24-inch intake pipe and in putting a submerged crib in the lake 5,000 feet from the shore line for the new water works supply for that town.

DRAFT OF WATER AT HARBOR, OHIO.

Inspector Ricketson completed taking soundings at Ashtabula Harbor, between the swing bridge and the piers, Friday last, and found at the mouth of the piers good 19 feet depth. The shallowest water found was near the mouth of the Lake Shore canal where it is only 16 feet. From this point up it gradually deepens until off the Haskell dock, where it is from 21 to 23 feet. Under the swing bridge there is 19 feet. The souudings were taken in the center of the river. The bar below Close's laundry which gave some trouble last year has disappeared, and the heaviest draft boat can now enter without danger of touching bottom. The absence of freshets and floods the past winter probably has something to do with the good depth of water.

The Daily Beacon says it was thought that when the government piers were extended into the lake last season that the formation of a sand bar some 200 or 300 feet outside of the mouth of the piers, as has before been customary annually, would be done away with. Soundings taken Friday dispel this hope, for a bar was found about the same distance from the end of the new piers as the bars were formerly from the end of the old piers. Of course the water where the new bar forms is considerably deeper than it was when bars formed before. Eighteen feet was the shallowest point found outside and boats would have no trouble in entering except in a high sea. It shows, however, that the bars are due to the river current and that in all probability would form if the piers were extended half-way to Canada.

HOW IS THIS ANYWAY?

There died recently at East Jordan, Mich., as a Detroit exchange tells us, a man, the sunshine and shadows of whose life were intermingled with a peculiar fulfillment of superstitious prophesy. The loss of his vessel in a collision and death of his mother following a dream announcing the fact. His own death came after a deep sleep that had haunted him for years. All make up a peculiar and strange combination of related facts and superstitions.

Capt. James Ward was born in Nova Scotia 68 years ago. He left the land of his birth at the age of 17, after learning the hardships of sailing the perilous coast of his native land, and secured work as a sailor before the mast on the lakes. He became well off, had a good home on the shore of Lake Erie at Port Burwell, Canada. He sailed for 40 years his own and other vessels, and had the reputation of being even reckless about the weather; but his great fear was of being run into by other vessels, and that presentiment could neither be coaxed nor shamed out of him.

On the night of September 20, 1881, while going down the Detroit river in the schooner Victor, Capt. Ward was in his berth asleep. He had a most distressing dream, that his mother was dying in far-away Nova Scotia, and that his two brothers, then long dead, were standing at his bedside. He was so troubled by the vision that he went on deck, only to see a big black boat directly ahead, which a second after crashed into them. The Victor sank almost immediately, and the captain, with his daughter and son, narrowly escaped drowning.

It was a collision with the steam barge R. J. Macy, just opposite Windsor.

Capt. Ward, upon going to the telegraph office to announce to his family the news of the accident, found awaiting him a telegram announcing the death of his mother the night before. He quit sailing at once, sold out and went to farming in Michigan, a discouraged and disheartened man. He was still haunted by his vision of trouble. He died after a lingering sickness of the most distressing sort, after lying in a deep sleep or trance for five or six days, exactly as he had feared and predicted.

RECENT CHANGES IN AIDS TO NAVIGATION.

NORTHERN LAKES AND RIVERS.

The following affects the List of Lights and Fog Signals, Northern Lakes and Rivers.

Bar Point Shoal Light-Vessel—On March 27, this vessel was replaced on her station off the entrance to the Detroit River from Lake Erie, for the summer season.

Limekiln Crossing (South) Light-Vessel: No. 1102—On March 27, this vessel was replaced on her station at the S. end of Limekiln Crossing Dredged Channel, Detroit River, for the summer season.

Limekiln Crossing (North) Light Vessel: No. 1103—On March 27, this vessel was replaced on her station at the N. end of Limekiln Crossing Dredged Channel, Detroit River, for the summer season.

Ballard Reef Light-Vessel—On March 27, this vessel was replaced on her station off Ballard Reef, Detroit River, Mich., for the summer season.

Grossepoint Light-Vessel—This vessel has been replaced on her station in Lake St. Clair, off the entrance into the head of Detroit River, for the summer season.

St. Marys Falls Canal (N. Pier) Light-Station—On the opening of navigation the light of St. Marys Falls Canal, N. Pier, Light-Station, W. entrance to St. Marys Falls Canal, was changed from a fixed red light of the sixth order to a fifth-order light showing fixed white, varied by a red flash every minute.

Eagle Harbor Light Station, Mich.—On the opening of navigation the fourth-order light at Eagle Harbor Light-Station, northerly side of Keweenaw Point, Lake Superior, was changed from a fixed white light, varied by a white flash every two minutes, to a fixed white light, varied by a white flash every minute. The order of the light was not changed.

Raspberry Island Light-Station, Wis.—On the opening ofnavigation the fifth-order light at Raspberry Island Light-Station, on Raspberry Island, one of the Apostle Islands, Lake Superior, was changed from a fixed white light, varied by a white flash every 90 seconds, to a fixed white light, varied by a white flash every minute. The order of the light was not changed.

Waugoshance Light-Station, Mich.—On the opening of navigation the fourth-order light at Waugoshance Light-Station, on the NW. end of Waugoshance Shoal, NE. end of Lake Michigan, was changed from a fixed white light, varied by a white flash every 90 seconds, to a fixed white light, varied by a white flash every 45 seconds. The order of the light was not changed.

The following affects the List of Beacons and Buoys, Northern Lakes and Rivers, 1892:

Detroit River—The buoys in this river have been replaced for the summer season.

St. Clair River—The buoys in this river have been replaced for the summer season.

Lake Huron—Corsica Shoal, Harlem Shoal, and Northwest Shoal buoys, off the entrance to the head of St. Clair River, have been discontinued.

Straits of Mackinac—Poe Reef Buoy, second-class nun, red, has been discontinued.

Lake Michigan, Summer Buoyage—The buoys which were taken up at the close of navigation are being replaced on their respective stations as rapidly as possible.

By order of the Light-House Board:

JAMES A. GREER,
Rear-Admiral, U. S. Navy, Chairman.

NOTE—The lists of Lights and Fog Signals of the United States, the lists of Beacons and Buoys in the different Light-House Districts, or copies of these bulletins, published by the Light-House Board, can be obtained, free of charge, on application to the Light-House Board, Washington, D. C., the Inspectors of the several Light-House Districts, the United States Custom Houses, the principal Agencies of the United States Coast and Geodetic Survey, the Hydrographie Office of the U. S. Navy, and the Branch Hydrographic Offices.

TRADE NOTES.

The Roberts Safety Water Tube Boiler Co. report business as being brisk and that they are running full time with their usual complement of men. They are full of orders and the hard times do not seem to have struck this concern yet.

Messrs. Douglass, Dick & Co., 101 St. Vincent street are exhibiting at present a new capstan called the "Providence Yacht Crank Capstan," says the *Evening Citizen*, of Glasgow, Scotland. It is made of manganese bronze, and when worked one way gives a single purchase, but on being turned in the reverse direction it has, it is claimed, four times the power. The new capstan costs 12 guineas, which is about the same as the ordinary appliances. A number of yachts have been supplied with the patent capstan. The foregoing, of course, applies to the "Providence" capstans manufactured by the American Ship Windlass Co., Providence, R. I.

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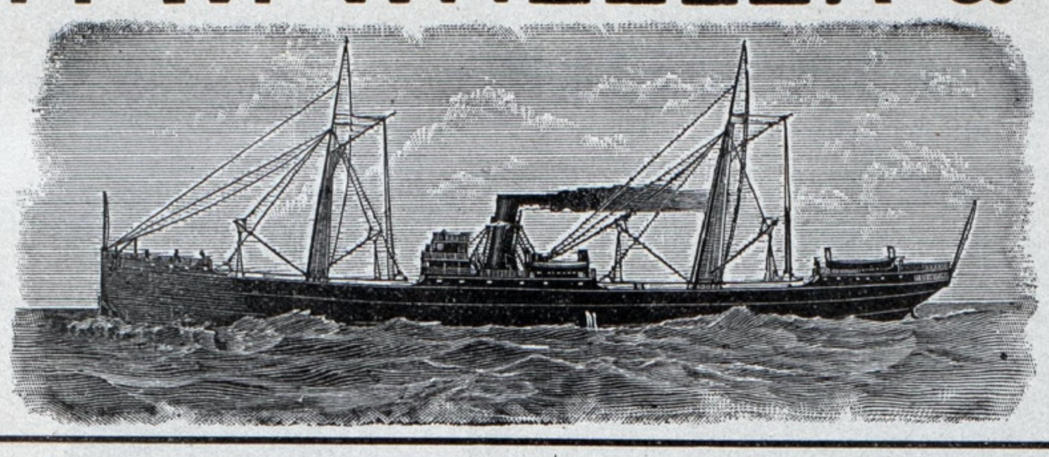

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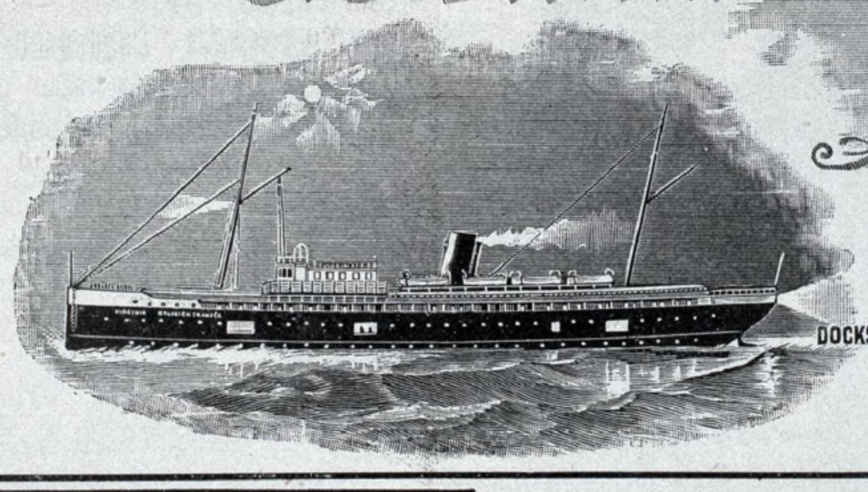

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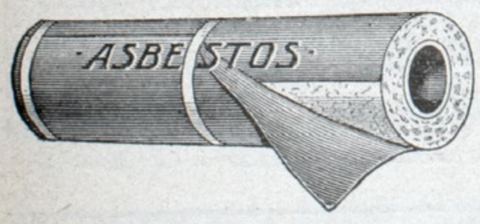

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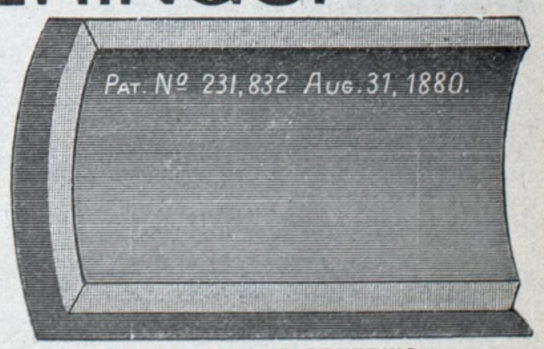

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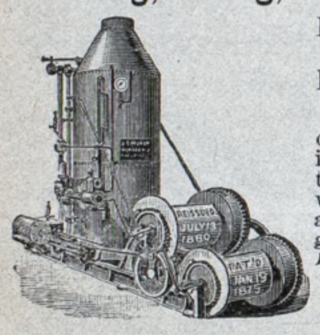

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Ar. Buffalo,	7:30 A. M.	Ar. Cleveland,	7:30 A. M.

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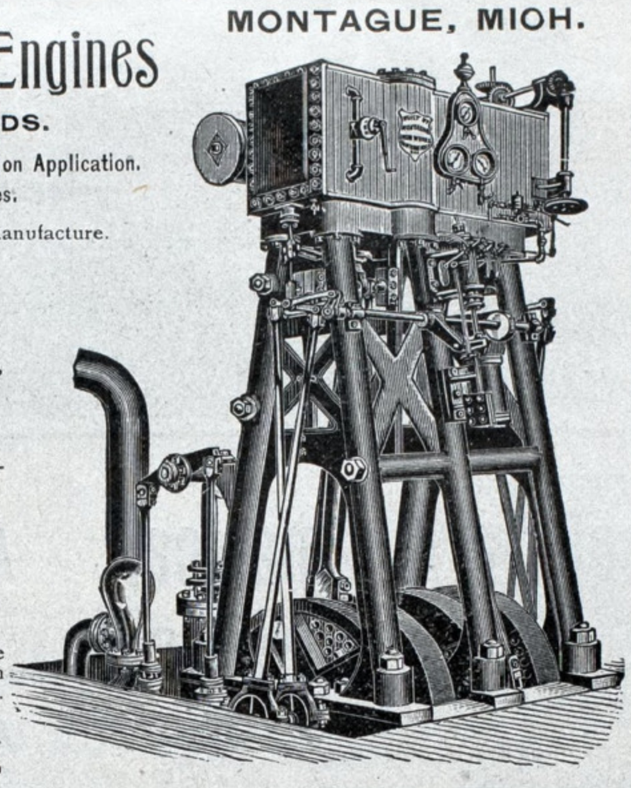

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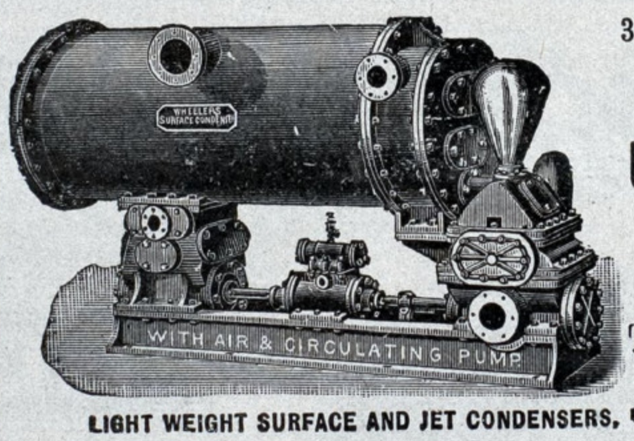

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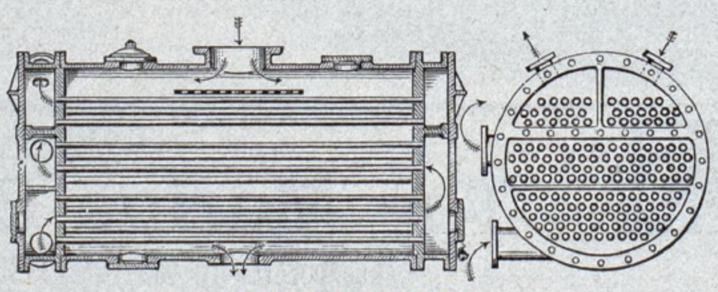

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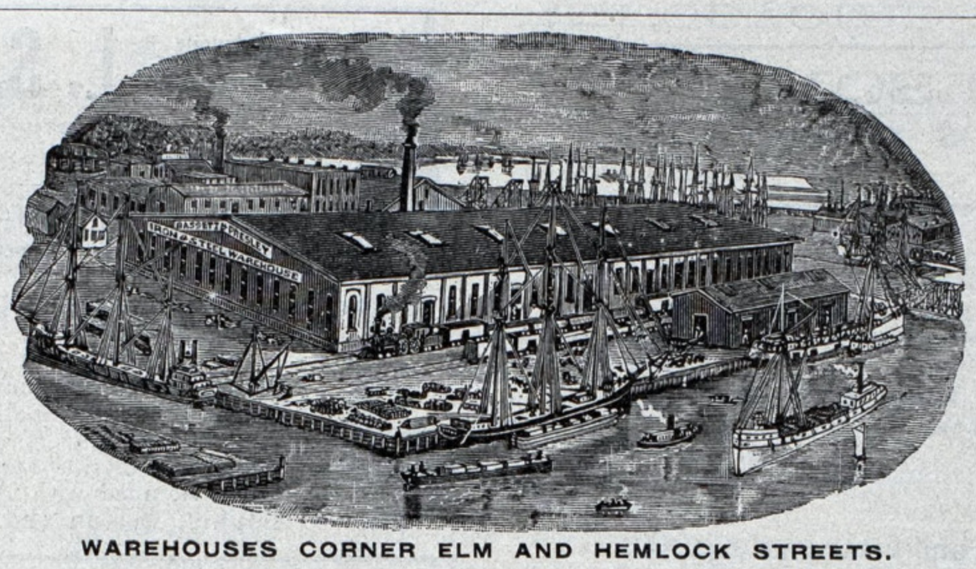

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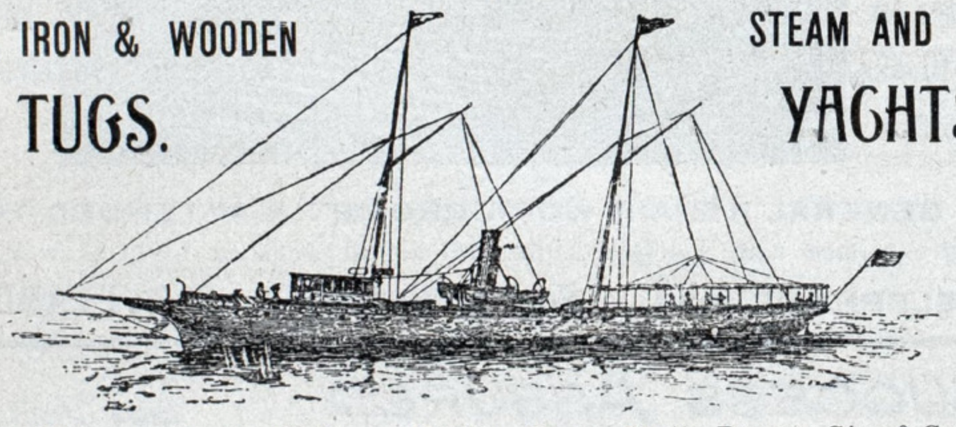

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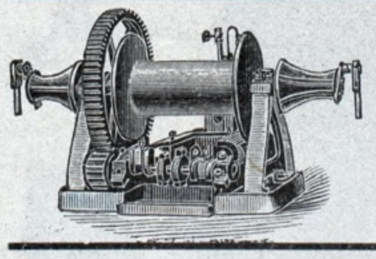

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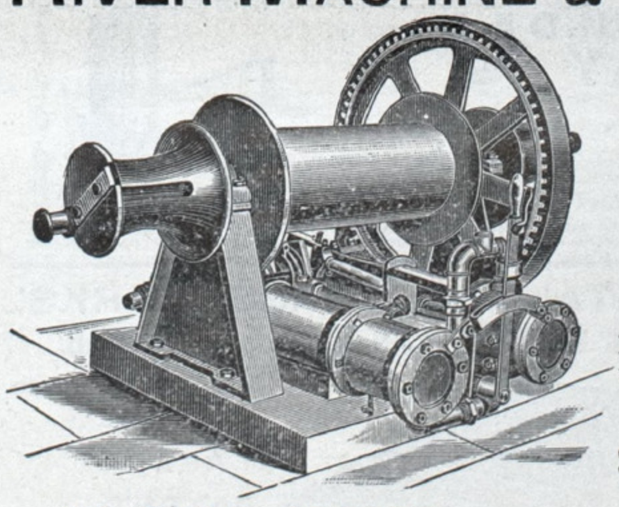

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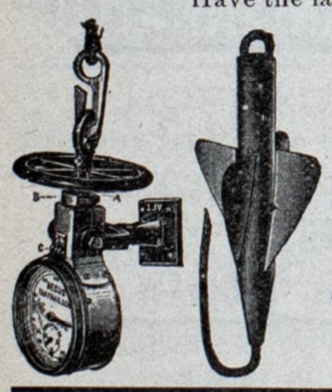

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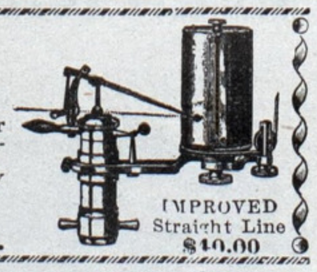

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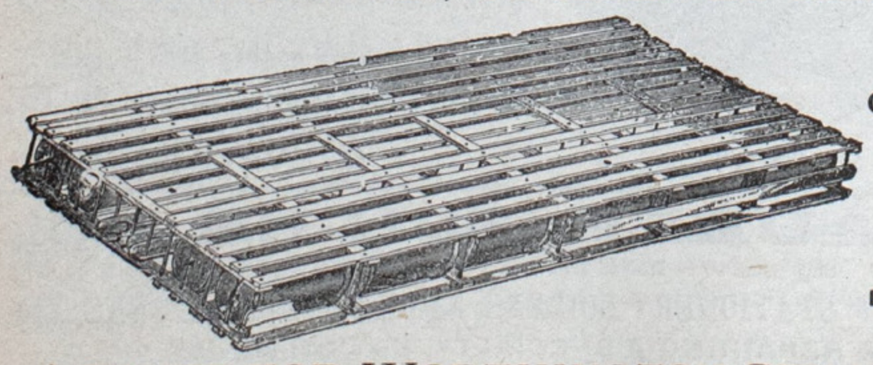

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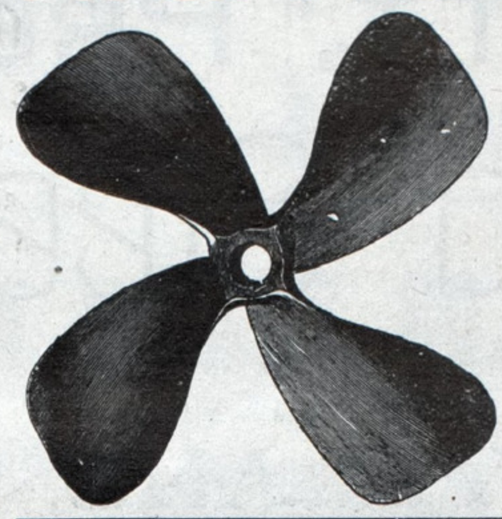

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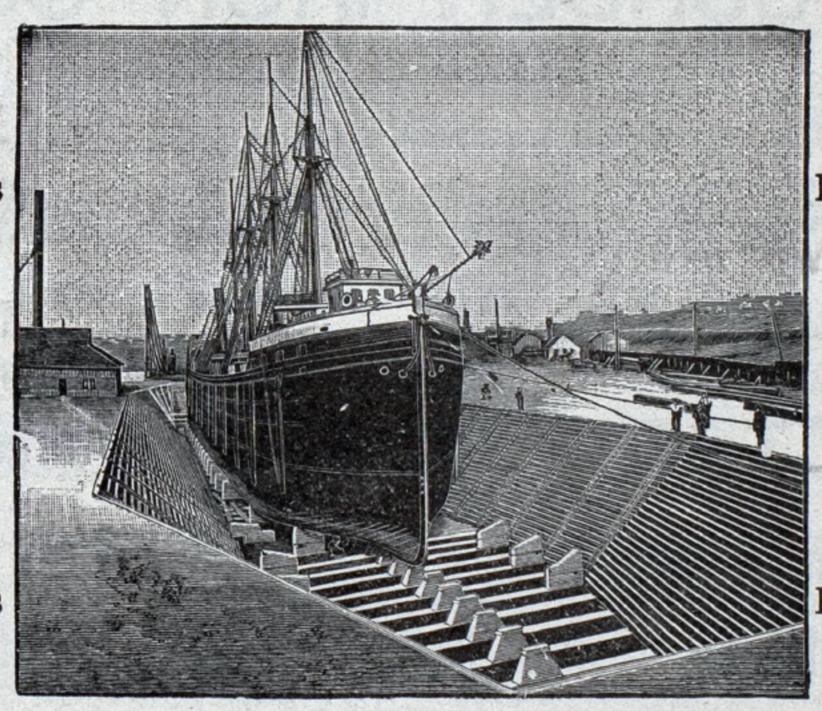

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